IES-5000

Support Notes

Oct 2006

ZyXEL
Unleash Networking Power

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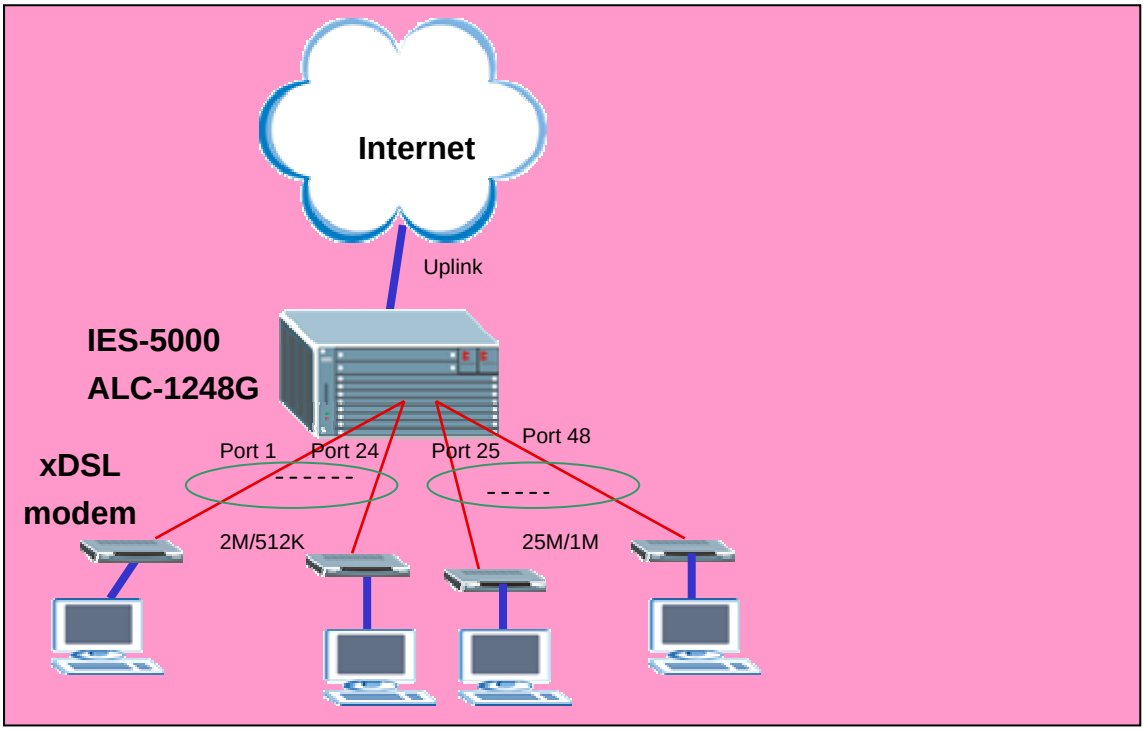
Application Notes

Provide Different DSL Port Speeds to different subscribers

An ISP may provide different Line speeds for each DSL port. In our IES-5000 have an easy way to configure the line speed for each port. It can create some profiles which can set different parameters to meet the different users' requirement.
In this application, we will set up two profiles. One is for low speed requirement with upstream/downstream is 2M/512Kbps and the other is for high speed requirement with upstream/downstream is 25M/1Mbps. We suppose there are general subscribers from port 1 to port 24 with a low speed profile and some enterprise users from port 25 to port 48 with high speed profile.



How to apply the profile to ports

In this application, we need to configure IES-5000 and ADSL CPE. We use ZyXEL Prestige 660R-61 CPE here.

1. IES-5000 Settings

1.1 Profiles settings

Set up Low Speed Profile. Give this profile a name like Profile_LowSpeed and input the MaxRate for Up Stream and Down Stream. In this case, we set 512Kbps and 2048Kbps for Up Stream and Down Stream.

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Set up High Speed Profile. Give this profile a name like Profile_HighSpeed and input the MaxRate for Up Stream and Down Stream. In this case, we set 1280Kbps and 24992Kbps for Up Stream and Down Stream.

CI command:

a.)High Speed (1M/24M) profile setup:
MSG1000G> profile adsl set 1_24M 1024 24576 minrate 64 64 delay 20 20 usmgn 310 0 60 dsmgn 310 0 60 usra startup 90 30 dsra startup 90 30

b.) Low Speed (512k/2M) profile setup:
MSG1000G> profile adsl set 512_2M 512 2048 minrate 64 64 delay 20 20 usmgn 310 0 60 dsmgn 310 0 60 usra fixed 90 30 dsra startup 90 30

Save current configurations
MSG1000G> config save

1.2 Profile Assignment

Assign Profile_LowSpeed to port 1. Select the Profile_LowSpeed profile. Copy the settings of port 1 to the ports from 2 to 24. After finishing port 1 setting.

For the high speed profile, you can set the Profile_HighSpeed to port 25. You also can select ADSL2+ mode. That will fix the mode on ADSL2+ mode.

Copy the settings of port 25 to the ports from 26 to 48. You can follow the same procedures as port 1.

CI command:
MSG1000G> port adsl set 7-1~24 512_2M auto
MSG1000G> port adsl set 7-25~48 1_24M auto
MSG1000G> port enable 7-1~48
MSG1000G> port pvc set 7-1~48-0/33 DEFVAL llc 1 0
MSG1000G> config save

2. Prestige 660R-61 Settings

We configure Prestige 660R-61 as bridge mode. The default VPI/VCI of IES-5000 is

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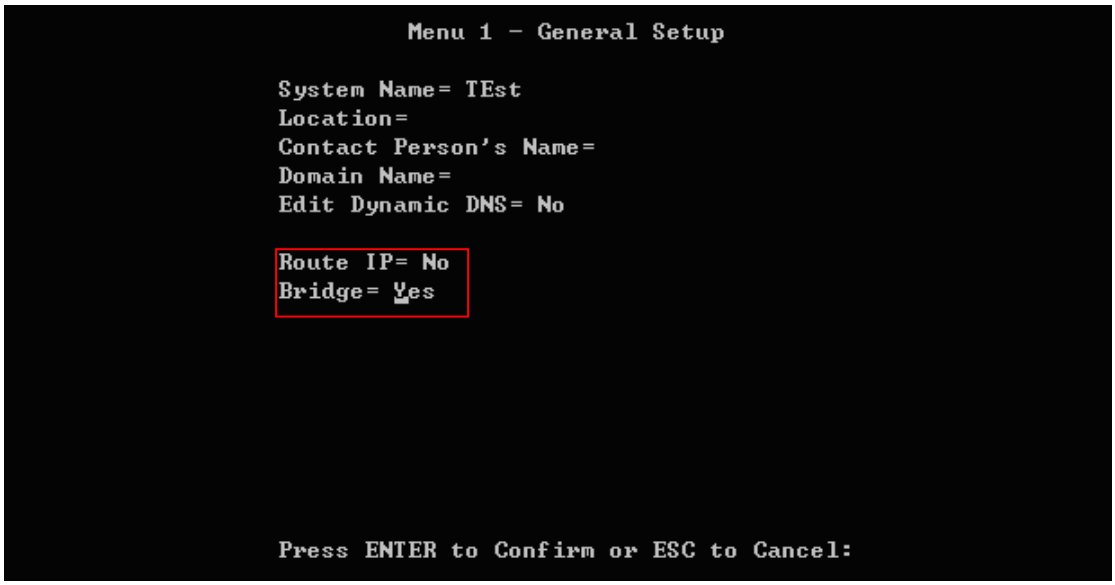
0/33. So we need to set up such values. Prestige 660R-61 has a Telnet server inside. We need to configure it via Telnet.

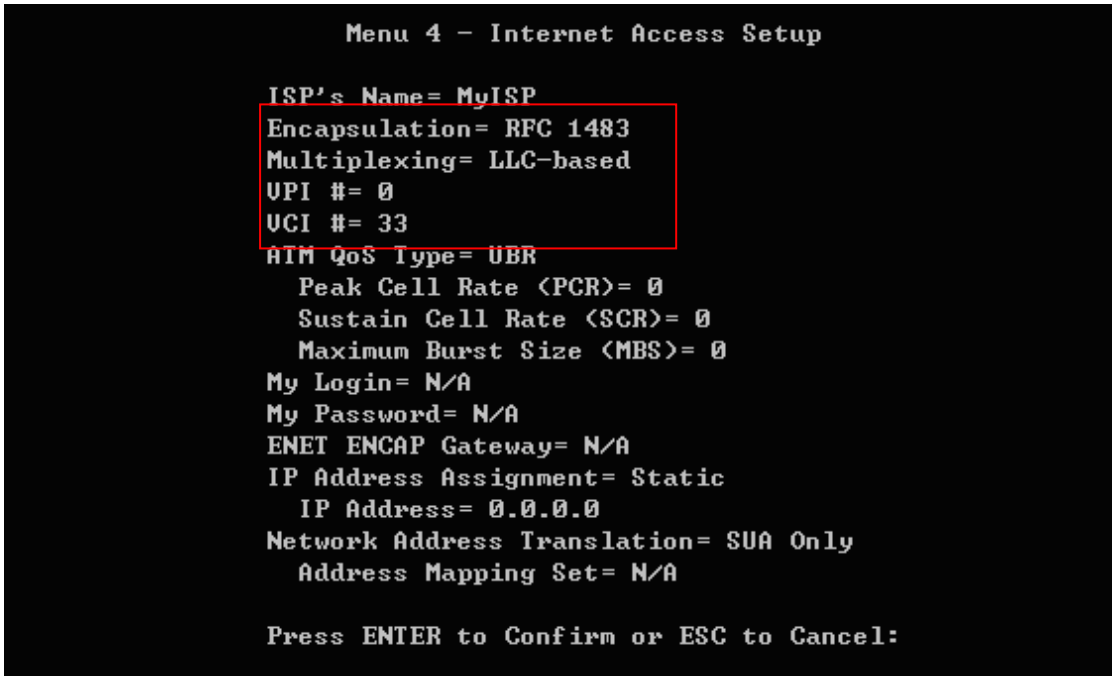
2.1 Menu1: General Setup

Go to Menu 1. In this menu, we must set “Rout IP = NO” and “Bridge = YES”.



2.2 Menu4: Internet Access Setup

The encapsulation must be RFC 1483 for bridge mode. The Multiplexing should be the same as IES-5000. The LLC-based is default mode of IES-5000. Additionally, we must check if the VPI/VCI is the same as IES-5000. The default VPI/VCI of IES-5000 is 0/33.


Menu 4 - Internet Access Setup
ISP's Name= MyISP
Encapsulation= RFC 1483
Multiplexing= LLC-based
VPI #= 0
VCI #= 33
ATM QoS Type= UBR
Peak Cell Rate (PCR)= 0
Sustain Cell Rate (SCR)= 0
Maximum Burst Size (MBS)= 0
My Login= N/A
My Password= N/A
ENET ENCAP Gateway= N/A
IP Address Assignment= Static
IP Address= 0.0.0.0
Network Address Translation= SUA Only
Address Mapping Set= N/A
Press ENTER to Confirm or ESC to Cancel:

2.3 Menu11.1: Remote Node Profile

In menu11.1, we should activate this profile with “Active= Yes”. The Encapsulation and the Multiplexing are the same as the menu 4. Setting “Edit ATM Options=Yes”

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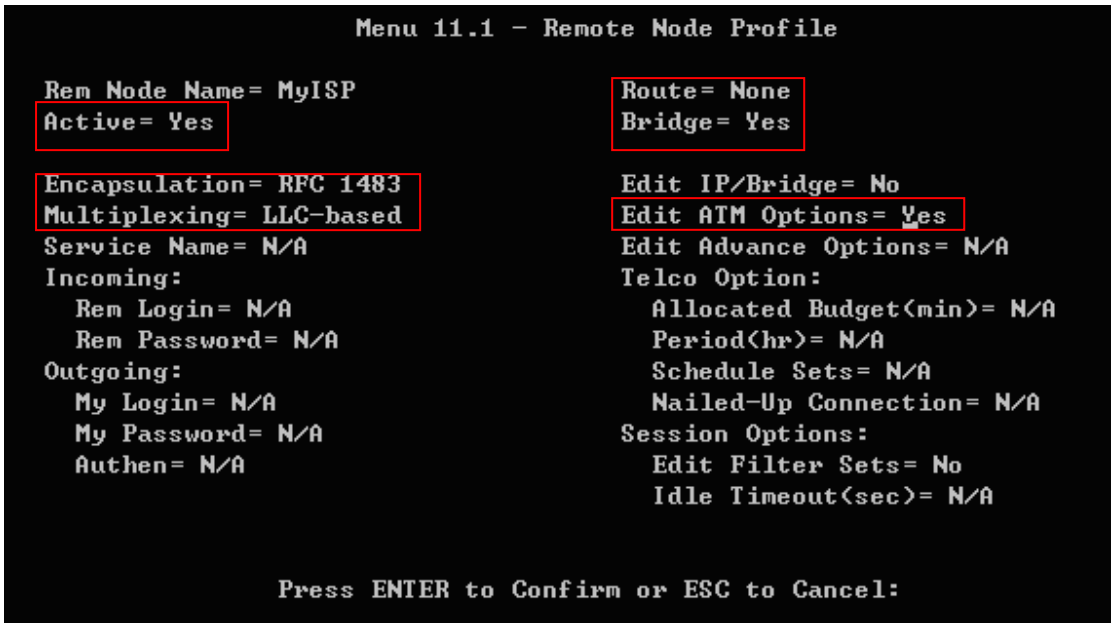
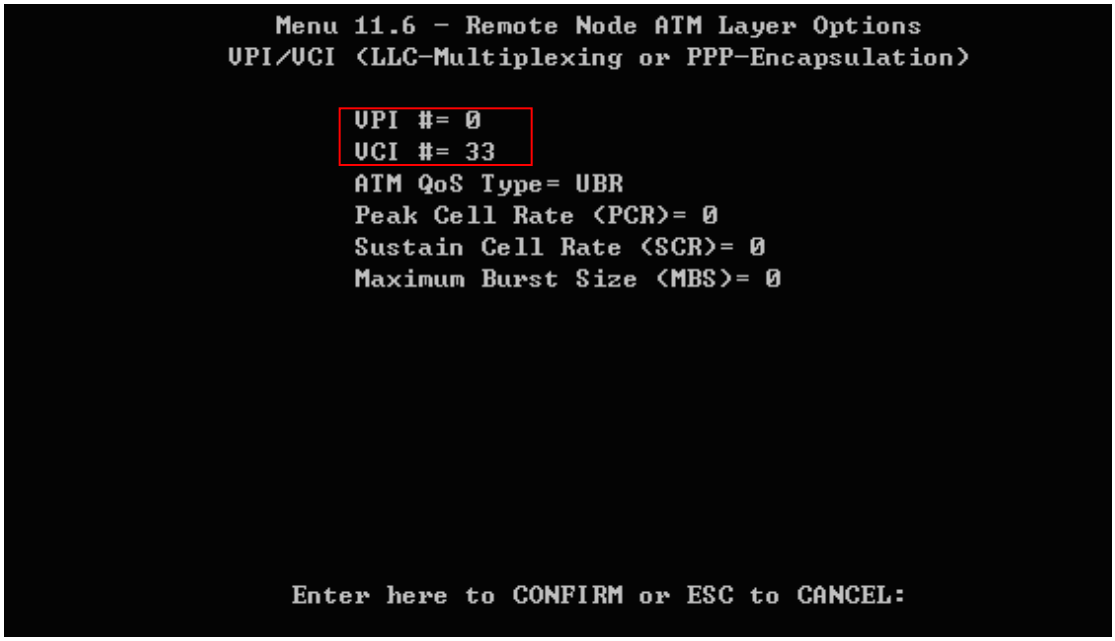
will enter Menu 11.6.



2.4 Menu11.6: Remote Node ATM Layer Options

Check the values above are the same as the IES-5000.


Menu 11.6 - Remote Node ATM Layer Options
VPI/VCI (LLC-Multiplexing or PPP-Encapsulation)
VPI #= 0
VCI #= 33
ATM QoS Type= UBR
Peak Cell Rate (PCR)= 0
Sustain Cell Rate (SCR)= 0
Maximum Burst Size (MBS)= 0
Enter here to CONFIRM or ESC to CANCEL:

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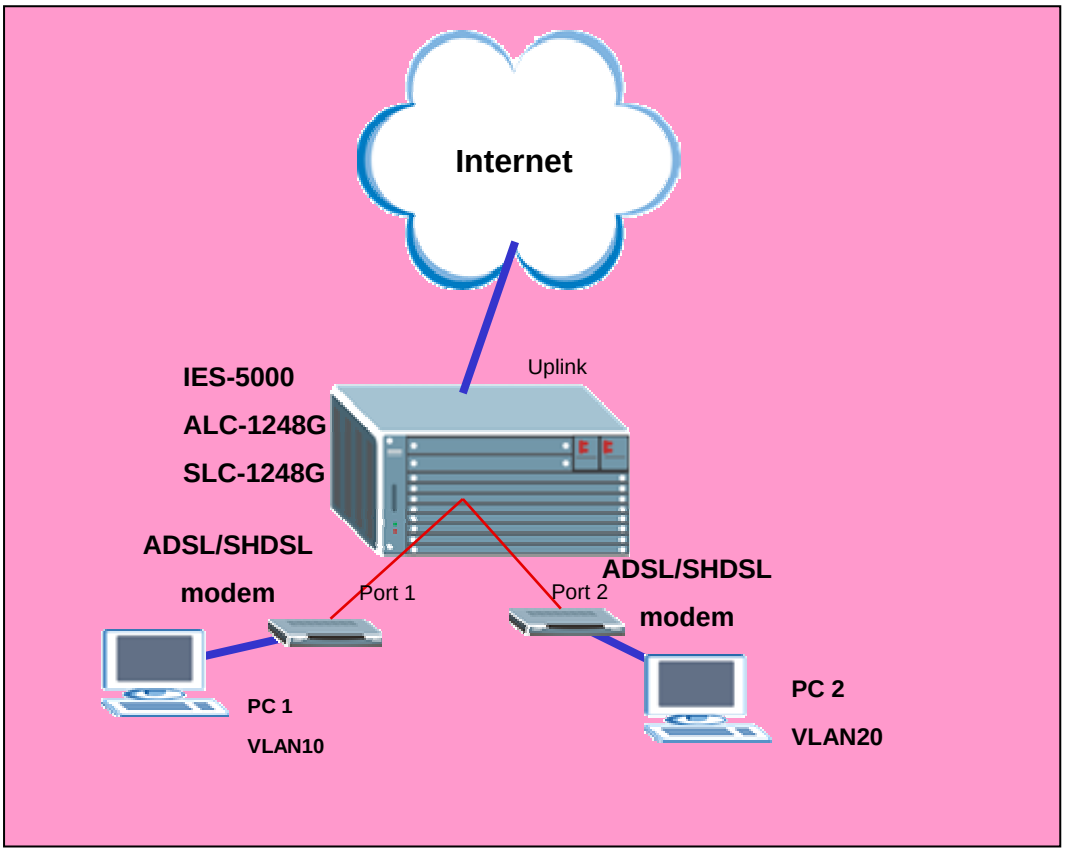
How to configure 802.1Q VLAN

A VLAN (Virtual Area Network) allows a physical network to be partitioned into multiple logical networks. Stations on a logical network belong to one group called VLAN group. A station can belong to more than one group. The stations on the same VLAN group can communicate with each other. With VLAN, a station cannot directly talk to or hear from stations that are not in the same VLAN groups.
We want to deploy VALN environment in this application. The following figure shows the VLAN example. Two PCs connect to the port 1 and port 2 of the line card and belong to different VLAN. One is VLAN 10 and the other is VLAN 20. So they can't communication with each other. But both PC 1 and PC 2 can connect to Internet.



How to set up a VLAN environment

In this application, we need to configure IES-5000 and ADSL CPE(or SHDSL CPE). We use ZyXEL Prestige ADSL 660R-61(or you may use P791 for SLC-1248G) CPE here. Because the two ports belong to different VLAN want to go to the Internet via Uplink port of IES-5000, we need to set up an extra VLAN and let the two ports be members of this VLAN.

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1. IES-5000 Settings

1.1 VLAN settings

Add VLAN10. Assign Port 1, ENET1 and ENET2 to be members of VLAN10.

CI command:

TGE1> vlan set 10 up1 fix untag
TGE1> vlan set 10 up2 fix untag
TGE1> vlan name 10 VLAN10
TGE1> port pvc vlan 7-1-0/33 10 join untag

Add VLAN20. Assign Port 2, ENET1 and ENET2 to be members of VLAN20 as shown.

CI command:

TGE1> vlan name 20 VLAN20
TGE1> vlan set 20 up1 fix untag
TGE1> vlan set 20 up2 fix untag
TGE1> port pvc vlan 7-2-0/33 20 join untag

Add VLAN200. Assign slot 7, Port 1, Port2, ENET1 and ENET2 to be members of VLAN200 as shown.

CI command:
TGE1> vlan name 200 VLAN200
TGE1> vlan set 200 up1 fix untag
TGE1> vlan set 200 up2 fix untag
TGE1> port pvc vlan 7-1-0/33 200 join untag
TGE1> port pvc vlan 7-2-0/33 200 join untag

1.2 PVID settings

After set up the three VLAN, then, set the PVID.

We assign VLAN 200(PVID) to ENET1, ENET2. Also, we assign VLAN 10 and VLAN 20 to Port1 and port2, respectively as shown.

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CI command:

TGE1> switch port pvid up1 200
TGE1> switch port pvid up2 200
TGE1> port pvc set 7-1-0/33 DEFVAL llc 10 0
TGE1> port pvc set 7-2-0/33 DEFVAL llc 20 0

1.3 Port Isolation

If we just want to isolate ports of IES-5000 and don't want to set any VLAN, there is another easy way to do this, setup **Port isolation.**

CI command:

TGE1> switch isolation enable

2. Prestige 660R-61(P791) Settings

Please refer to the procedures in previous application.

Triple play Application

The IES-5000 allows you to use different channels (also called Permanent Virtual Circuits or PVCs) for different services. Define channels on each DSL port for different services and assign each channel a priority, a VLAN and ATM Quality of Service (QoS). The ATM QoS allows you to regulate the average rate and fluctuations of data transmission. This helps eliminate congestion to allow transmission of real time data (such as audio and video).

In this application, we demonstrate how to set up the multiple PVCs environment. From the figure below, the PC wants to access the two kinds of network services. One is the Internet service (data service) and the other is Video service. Because we hope we can see the video smoothly, we need to set the video service higher priority. In IES-5000, we can set the two services with different VLANs and assign the PVCs with different VLAN, priority and ATM QoS. That will make the video traffic get the higher priority than data traffic. We also can expand this application to triple play

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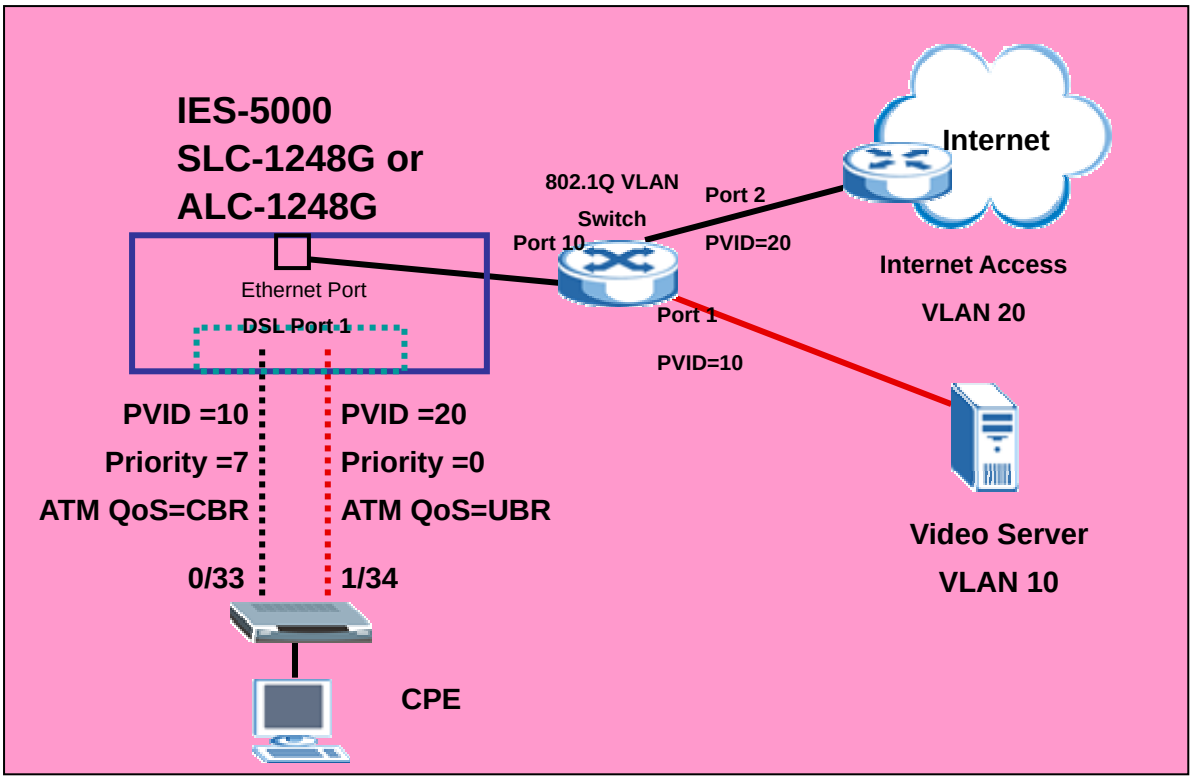
environment.



How to set up a Multiple PVCs environment.

Following procedures will introduce the settings of IES-5000, VLAN-aware switch and ADSL (SHDSL) CPE. We use ZyXEL ES-2024 and Prestige 660R-61(You may use P791 for SLC-1248G) as VLAN-aware switch and xDSL CPE, respectively.

1. IES-5000 Settings

1.1 VLAN setup

We can set up VLAN like procedure described in VLAN application. Add VLAN10. Assign Port 1, ENET1 to be members of VLAN10 as show. We need to check the Tx Tagging on ENET1.

TGE1> vlan name 10 VLAN10
TGE1> vlan set 10 up1 fix tag
TGE1> port pvc vlan 7-1-0/33 10 join untag

Add VLAN20. Assign Port 1, ENET1 to be members of VLAN20 as show. We need to check the **Tx Tagging** on ENET1.

TGE1> vlan name 20 VLAN20

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TGE1> vlan set 20 up1 fix tag
TGE1> port pvc vlan 7-1-0/33 20 join untag

1.2 VC profile setup

Add Defval_CBR VC profile for Profile Setup. Set up Encap, Class, PCR and CDVT as shown. Encap should be LLC the same as IES-5000. Class should be CBR which has higher priority in ATM QoS.

CI command

TGE1> profile atm set Def_CBR cbr 300000

1.3 Multiple PVCs setup

We hope VPI/VCI with 0/33 get the higher priority. We should modify this VPI/VCI with Defval_CBR profile which we created before.

CI command:

TGE1> port pvc set 7-1-0/33 Defval_CBR llc 0 7

Then, we add the VPI/VCI with 0/34. We apply the DEFVAL profile to this channel.

CI command:

TGE1> port pvc set 7-1-0/34 Defval llc 20 0

2. Prestige 660R-61(P791) Settings

We need to set two channels. One is 0/33 and the other is 0/34. From former application, we already knew how to set up CPE with one channel (0/33). We just demonstrate how to set up second channel.

2.1 Menu11.1: Remote Node Profile

In menu11.1, we should activate this profile with “Active= Yes”. The Encapsulation and the Multiplexing are the same as the menu 4. Setting “Edit ATM Options=Yes” will enter Menu 11.6.

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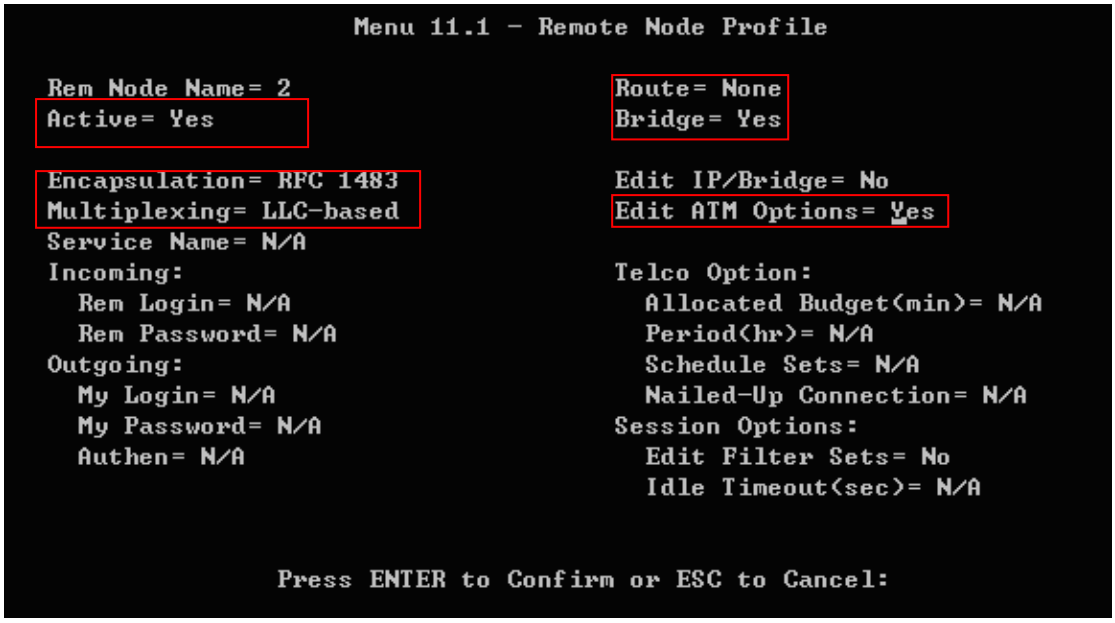
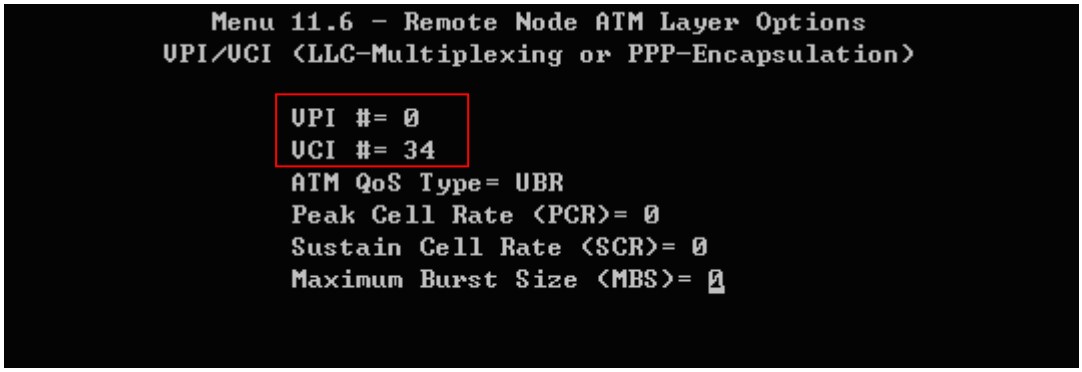


2.2 Menu11.6: Remote Node ATM Layer Options

We should set up another VPI/VCI with 0/34 the same as the IES-5000.


Menu 11.6 - Remote Node ATM Layer Options
VPI/VCI (LLC-Multiplexing or PPP-Encapsulation)
VPI #= 0
VCI #= 34
ATM QoS Type= UBR
Peak Cell Rate (PCR)= 0
Sustain Cell Rate (SCR)= 0
Maximum Burst Size (MBS)= 0

3. ES-2024 settings

3.1 VALN

Click **Advanced Application** and **VLAN** in navigation panel to display configuration screen as shown. Click **Static VLAN** to show VLAN setup screen.

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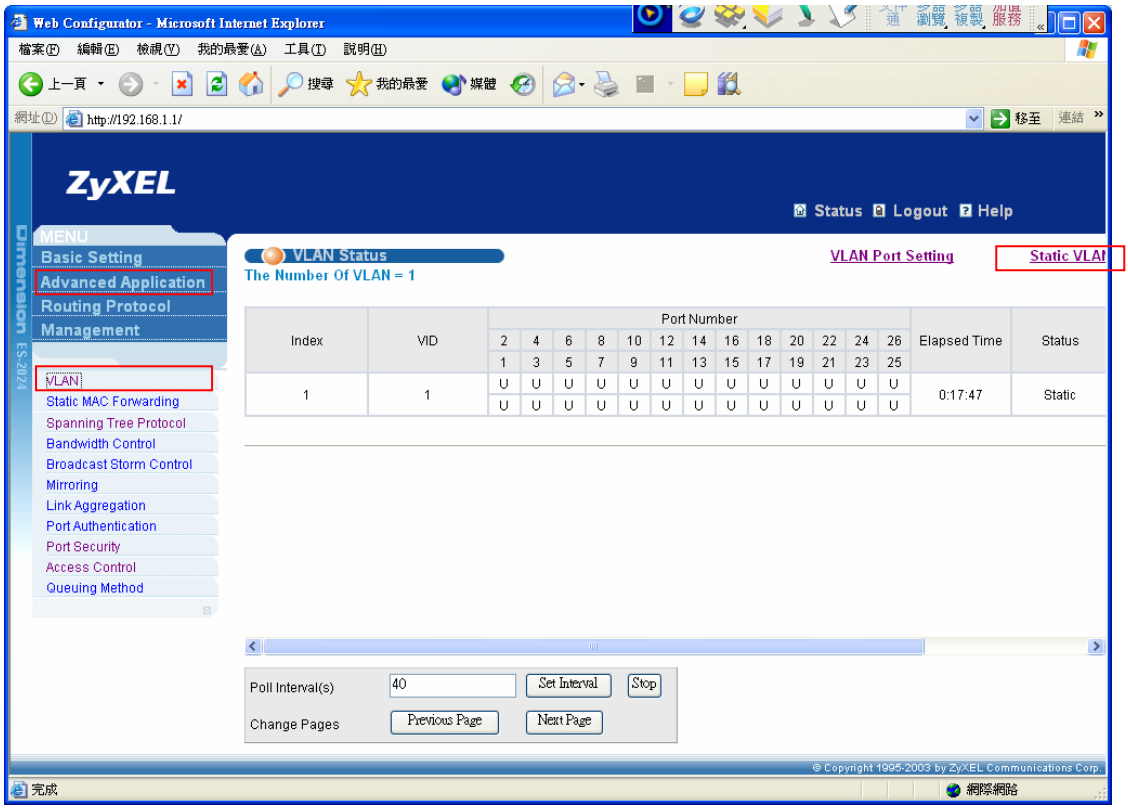
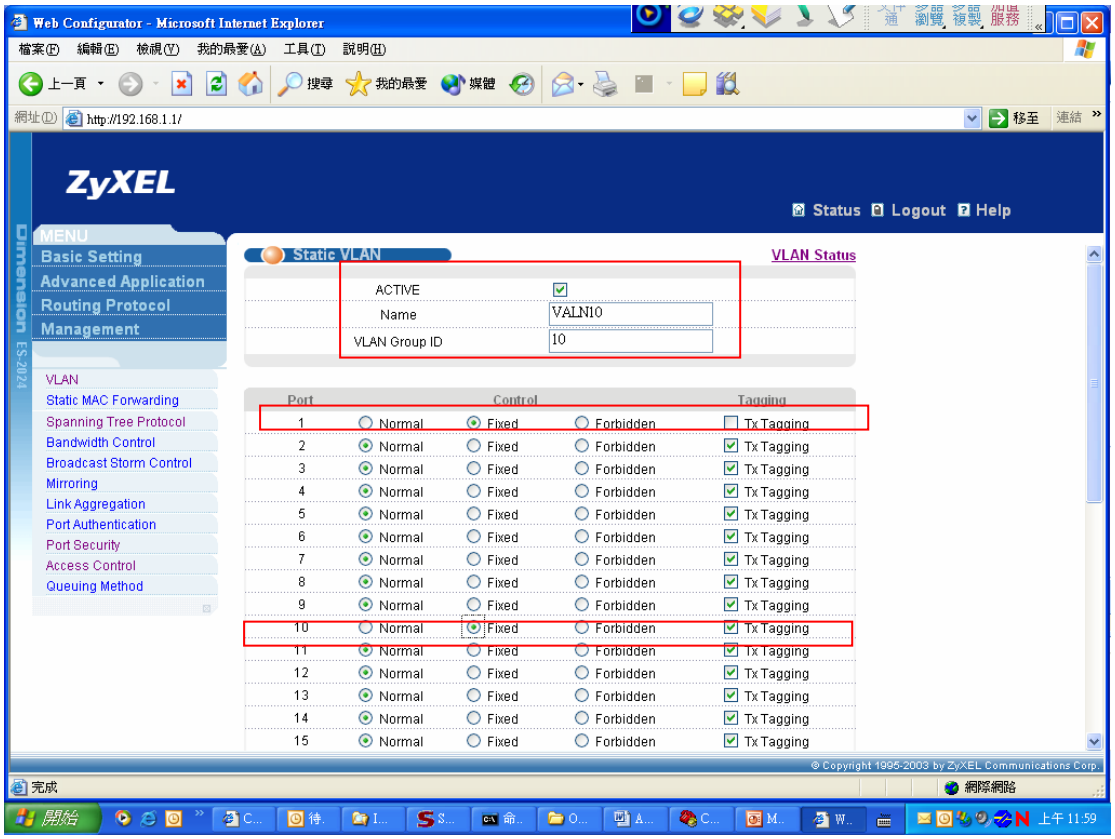


Add VLAN10. Assign Port 1, Port 10 to be members of VLAN10 as show. We need to check the **Tx Tagging** on Port 10.



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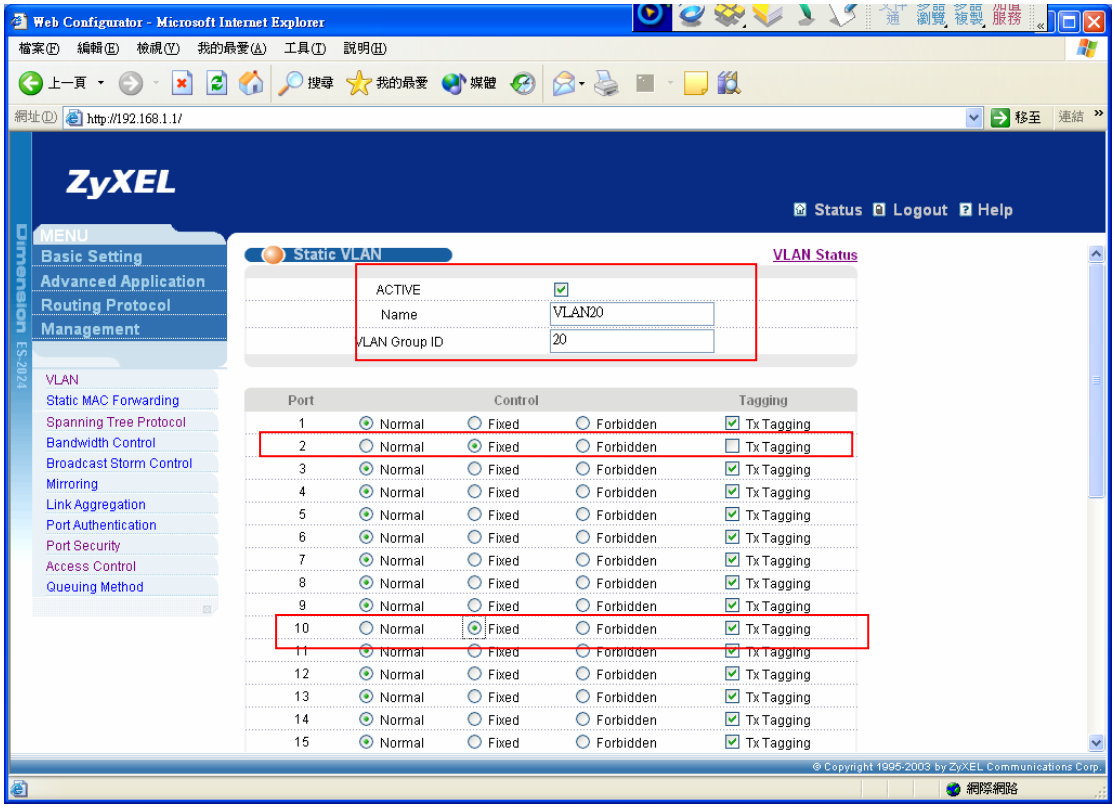
Add VLAN20. Assign Port 2, Port 10 to be members of VLAN20 as show. We need to check the **Tx Tagging** on Port 10.



3.2 PVID setup

Click **Advanced Application** and **VLAN** in navigation panel to display configuration screen as shown. Click **VLAN Port Setting** to show PVID setup screen.

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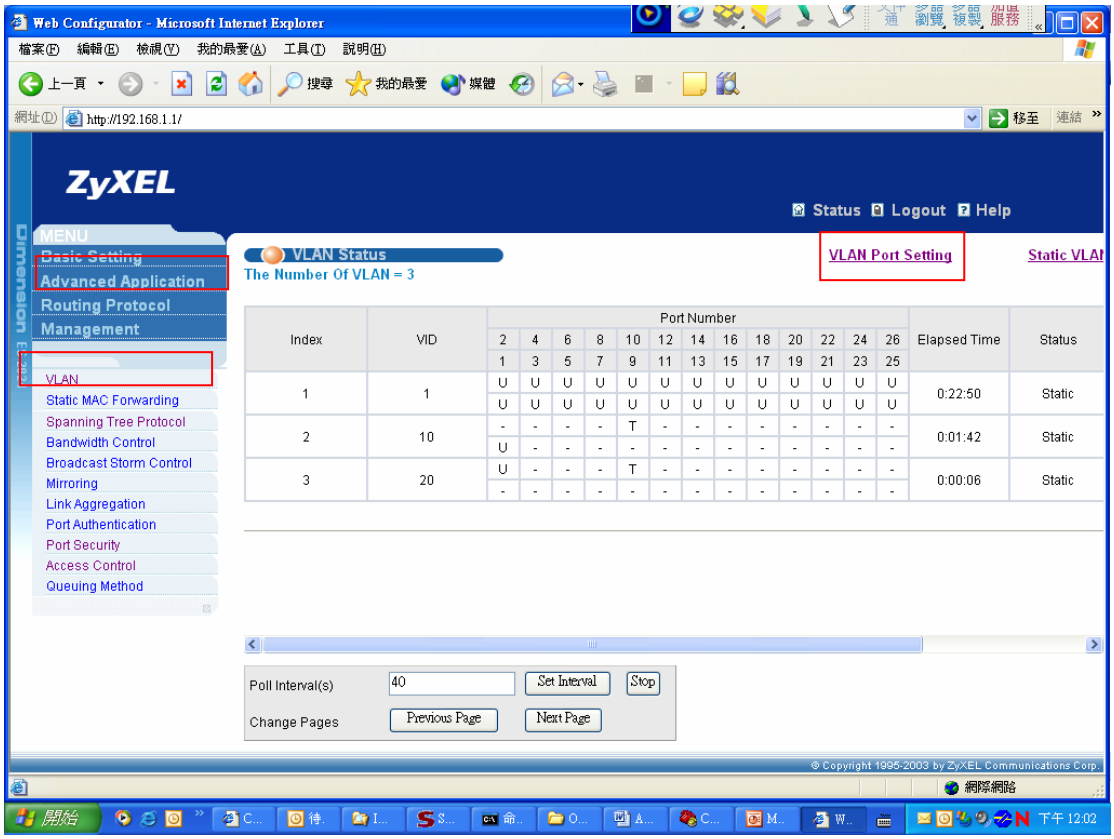
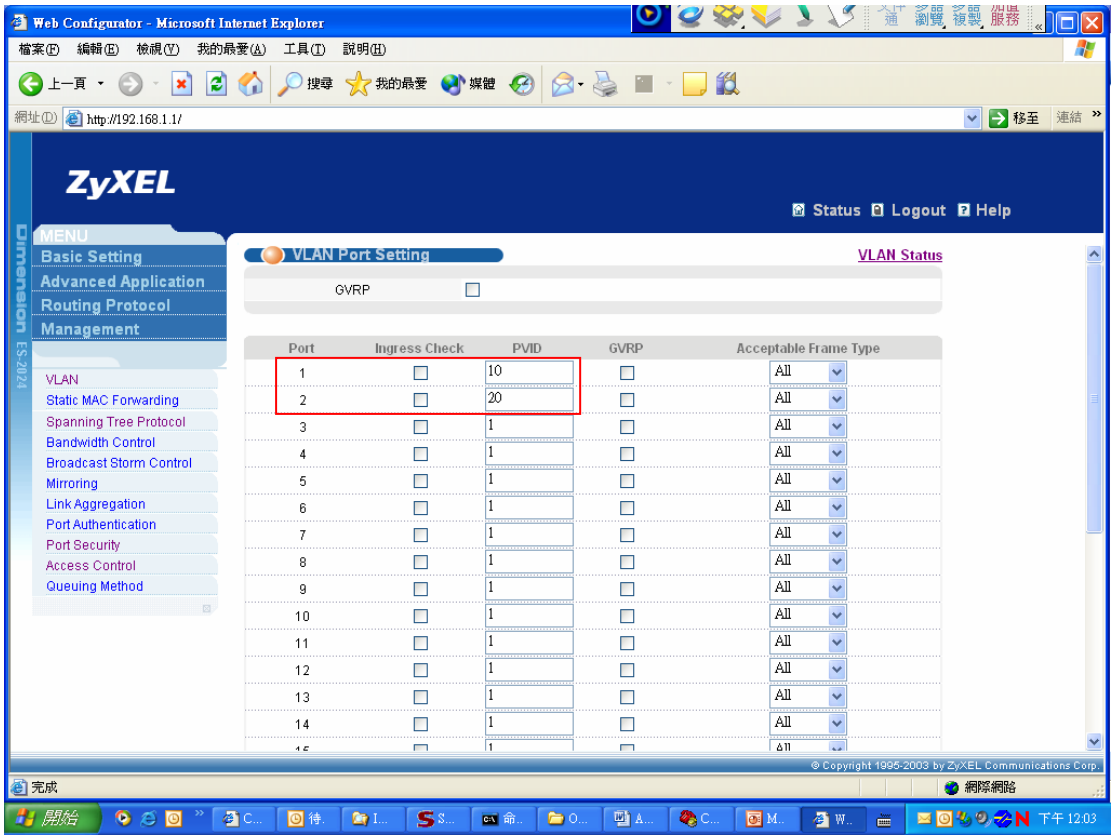


Let 10 be the PVID of Port 1 and 20 be the PVID of Port 2.



In this application, you will see the video traffic will go via 0/33 and data traffic will

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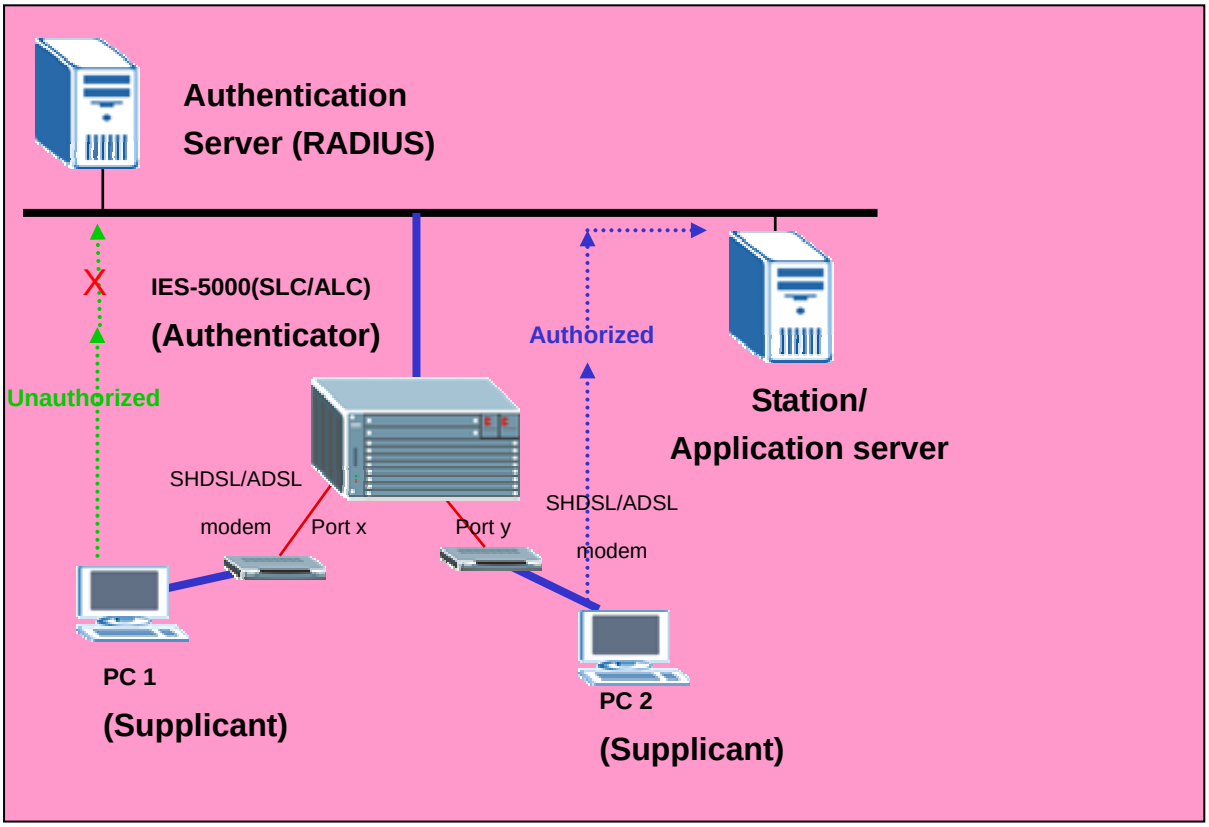
go via 0/34. And the 0/33 get the higher priority. The video traffic will go first when the two traffics arrive at the same time.

802.1x Application

IEEE 802.1x port-based authentication is desired to prevent unauthorized ports (clients) from gaining access to the network. It is an extended authentication protocol that allows support of RADIUS (Remote Authentication Dial in User Service, RFC2138, 2139) for centralized user profile management on a network RADIUS server.

We want to deploy 802.1x environment in this application. The following figure shows the 802.1x example. PC1(supplicant) and PC2(supplicant) want to access to the application server. If PC1 is not unauthorized, the traffic from PC1 to application server will be blocked. If PC2 is an authorized client, then it can access to the application server. From the figure, IES-5000 acts as an authenticator.



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How to set up an 802.1x environment.

We should configure Authenticator, RADIUS and Supplicant three parts in 802.1x environment. The Microsoft 802.1x client and ZyXEL Vantage 50 will be used as supplication and RADIUS, respectively. Following sections will describe the detailed procedure to set up the environment.

1. IES-5000 (Authenticator) settings:

1.1 RADIUS settings:

Enable the 802.1x Authentication and the RADIUS server IP address, UDP port and shared Secret, which is the same as Radius server. Then click Apply to make the settings take effect.

TGE1> sys sw dot1x enable
TGE1> sys sw dot1x set radius server 192.168.1.3
TGE1> sys sw dot1x set radius port 1812
TGE1> sys sw dot1x set radius sec 12345678
TGE1> config save

2. Vantage 50(RADIUS) settings:

We use Vantage 50 as the RADIUS server. It's a one of ZyXEL's product. Of course, you can use other RADIUS server like Funk Steel-Belted RADIUS, Cisco Access Control Server, MeetingHouse Aegis server and so on. You can configure it by WEB GUI and its default IP is 192.168.1.3.

2.1 RADIUS server setup

Click **RADIUS**, **RADIUS SERVER** in the navigation panel to display configuration screen as shown. You can use the default values or change the **Authentication port**, **Shared Secret**. Remember these values MUST be the as the settings of client.

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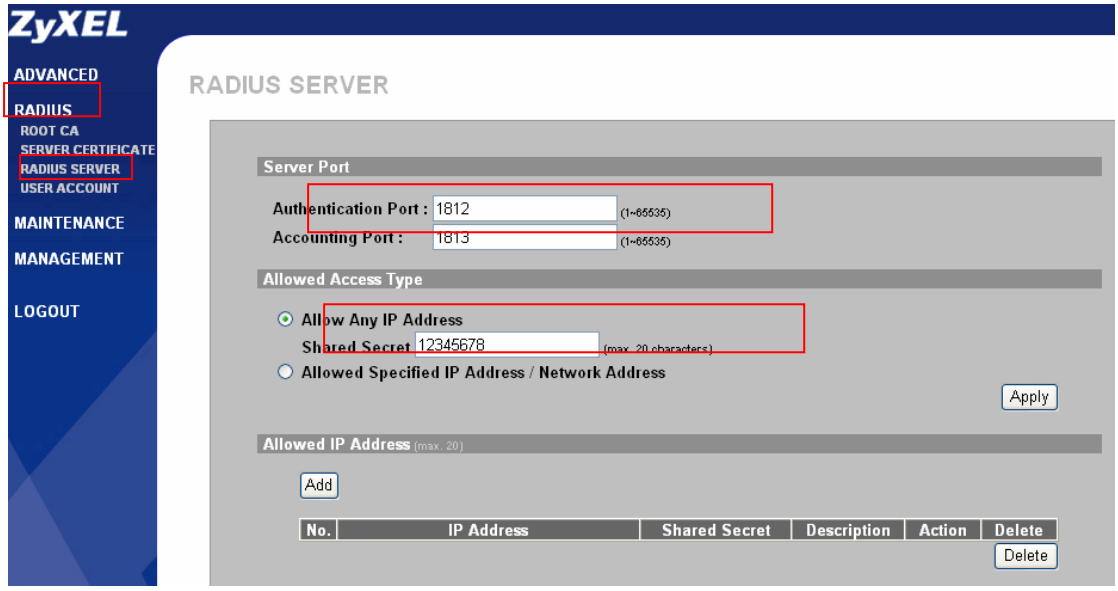
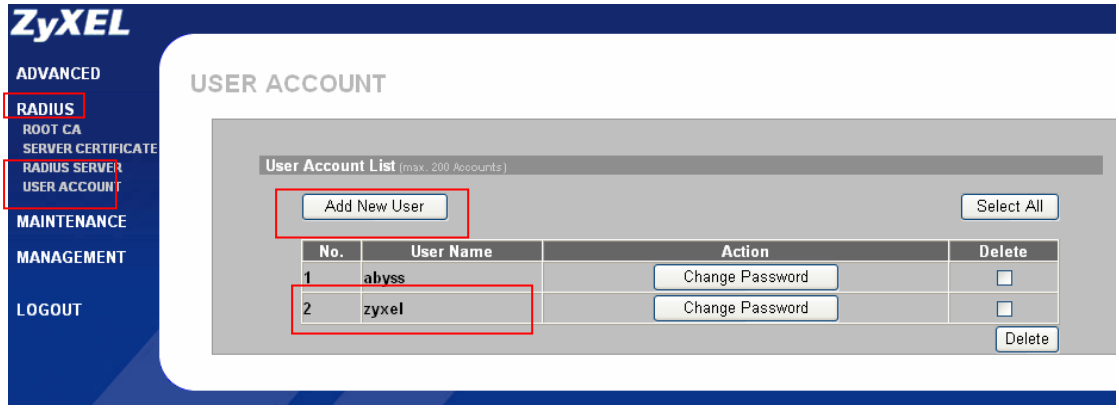


2.2 Create User Account

Click **RADIUS**, **USER ACCOUNT** in the navigation panel to display configuration screen as shown. You can use the existed user account or create the new one by clicking **Add New User** button. Remember the client site MUST use the account in RADIUS server.



3. Windows XP(Supplicant) settings:

There are many supplicants we can choose like MeetingHouse Aegis client, Funk Odyssey client and Microsoft 802.1x client. We take Microsoft 802.1x client as an example here.

3.1 802.1x/MD5-challenge setup

Open the **Local Area connection Properties**, and then click **Authentication** page. Check the **Enable IEEE 802.1x authentication for this network** and select the **MD5-challenge** in EAP type combobox. Please see the following figure.

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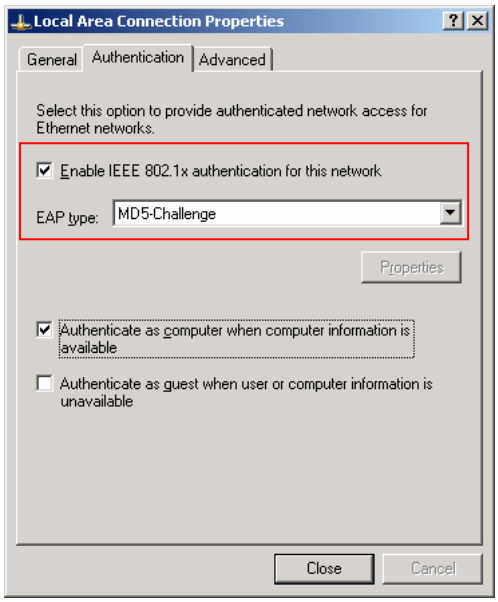
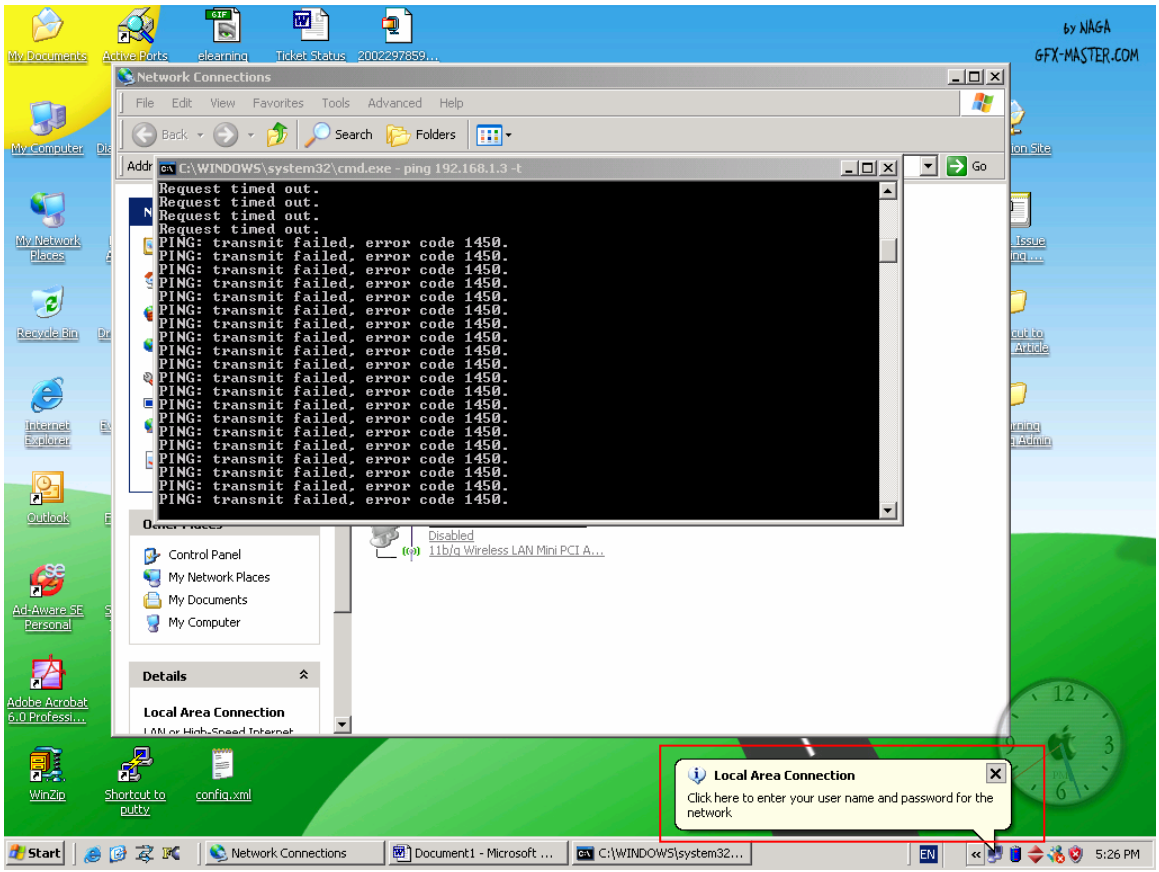


When the 802.1x starts, it will prompt you to enter the user name and password. Please see the following figure.



After click the icon, there will be a dialog for entering the user name and password. Click ok after input the correct user name and password that are in the database of authentication server.

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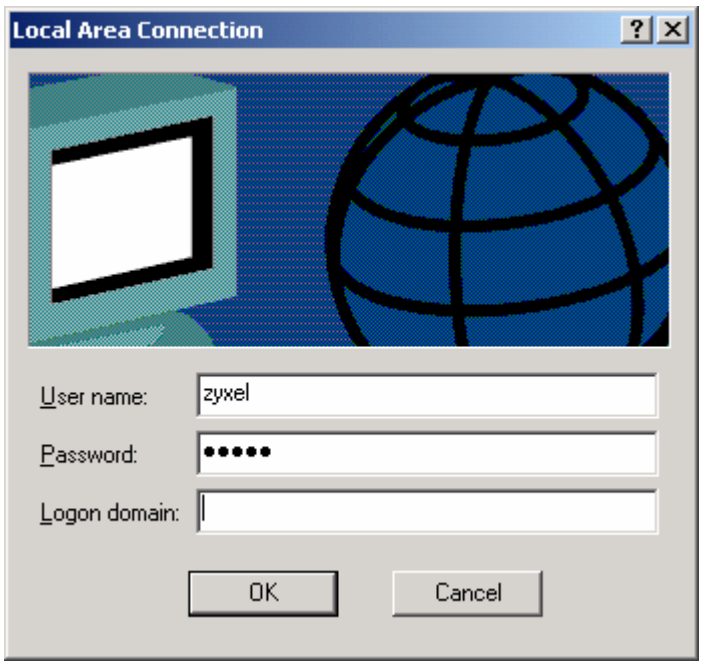
The settings of client site are finished.



After above procedure, we can allow the authenticated port the access the server. If the DSL port doesn't be authenticated, the PCs behind the port can't access the network.

4. Prestige 660R-61 Settings

Please refer to the procedures in previous application.

Setting up the Syslog Server

ZyXEL products are able to send system log to a Syslog deamon such as Unix Syslogd and Kiwi's Syslog Daemon (http://www.kiwisyslog.com/). When DSL or Ethernet ports are linked up/down, IES-5000 sends a record to Syslog server. The Syslog server can be placed on the network, which IES-5000 can access.

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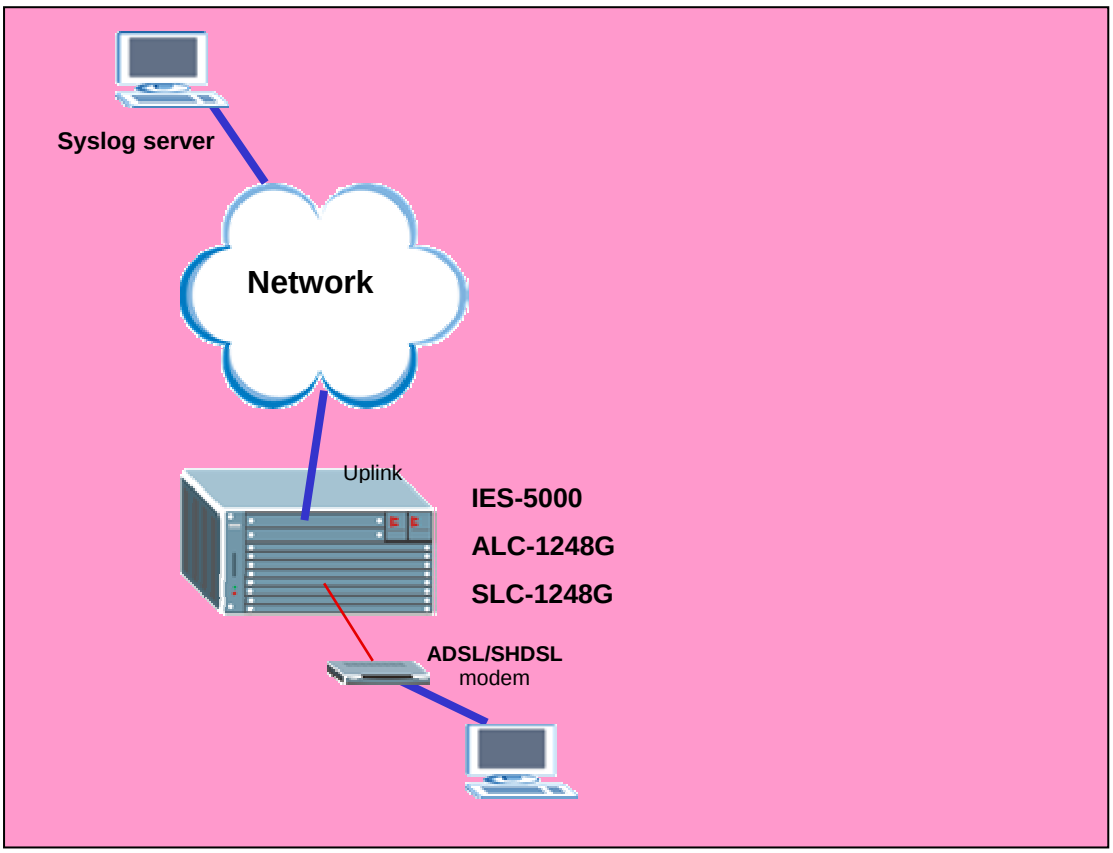
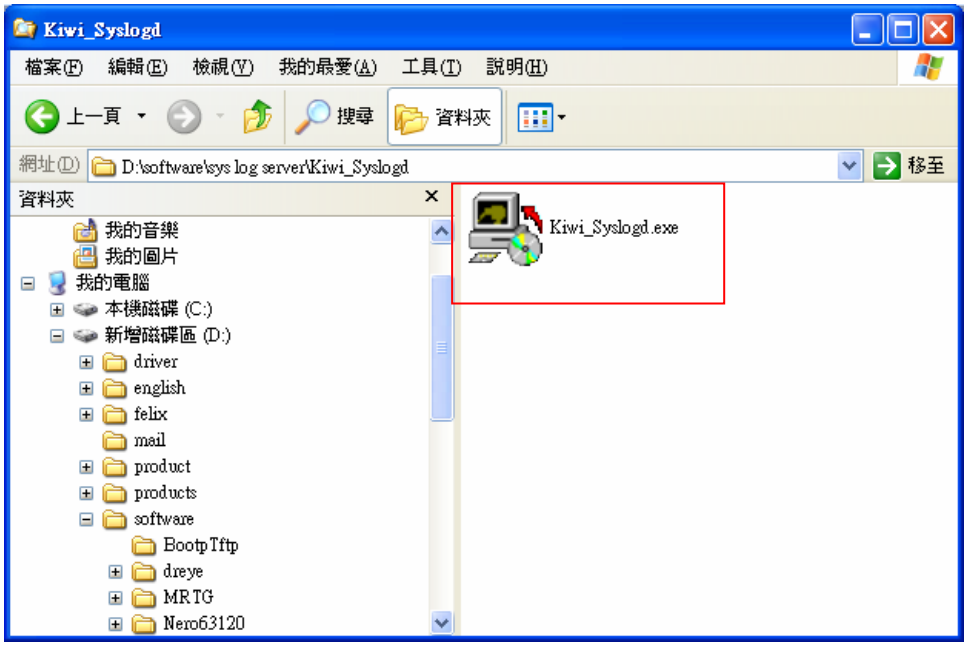


How to set up a Syslog server.

We should configure IES-5000 and Syslog server in this application. Here, we use the Kiwi's Syslog Daemon as an example. Following sections will describe the detailed procedures to set up the environment.

1. Install and Run Kiwi's Syslog Server

Double Click the Kiwi's Syslog Server installing program. It is very easy to install it.



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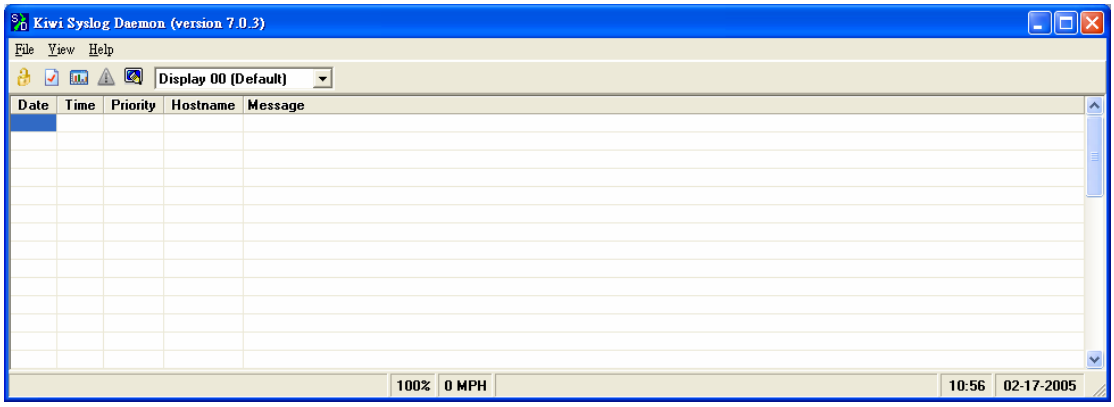
After finishing the installation, you can run it from the Start Menu. And you will see following dialog. And the Server's IP is 192.168.1.77.


Kiwi Syslog Daemon (version 7.0.3)
File View Help
Display 00 (Default)
Date Time Priority Hostname Message
100% 0 MPH 10:56 02-17-2005

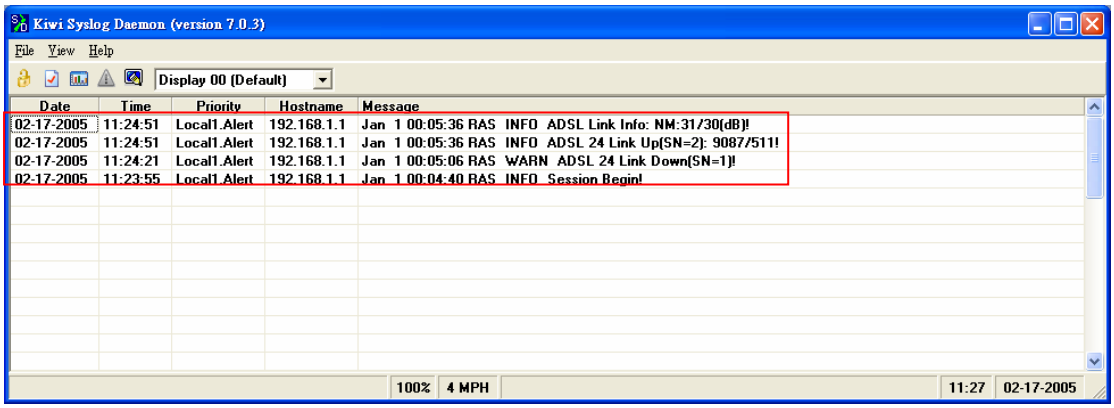
2. IES-5000 settings

Enable Syslog server within the IES-5000. Assign the UNIX Syslog Server IP, 192.168.1.77 in this case. Choose a log facility from 'Local 1' to 'Local 7'. Then save the configurations.

CI command:

TGE1> sys syslog enable
TGE1> sys syslog server 192.168.1.77
TGE1> sys syslog facility 1
TGE1> config save

When DSL ports are linked up/down, IES-5000 sends a record to Syslog server. We can see these logs in Kiwi's Syslog server.


Kiwi Syslog Daemon (version 7.0.3)
File View Help
Display 00 (Default)
Date Time Priority Hostname Message
02-17-2005 11:24:51 Local1.Alert 192.168.1.1 Jan 1 00:05:36 RAS INFO ADSL Link Info: NM:31/30(dB)!
02-17-2005 11:24:51 Local1.Alert 192.168.1.1 Jan 1 00:05:36 RAS INFO ADSL 24 Link Up(SN=2): 9087/511!
02-17-2005 11:24:21 Local1.Alert 192.168.1.1 Jan 1 00:05:06 RAS WARN ADSL 24 Link Down(SN=1)!
02-17-2005 11:23:55 Local1.Alert 192.168.1.1 Jan 1 00:04:40 RAS INFO Session Begin!
100% 4 MPH 11:27 02-17-2005

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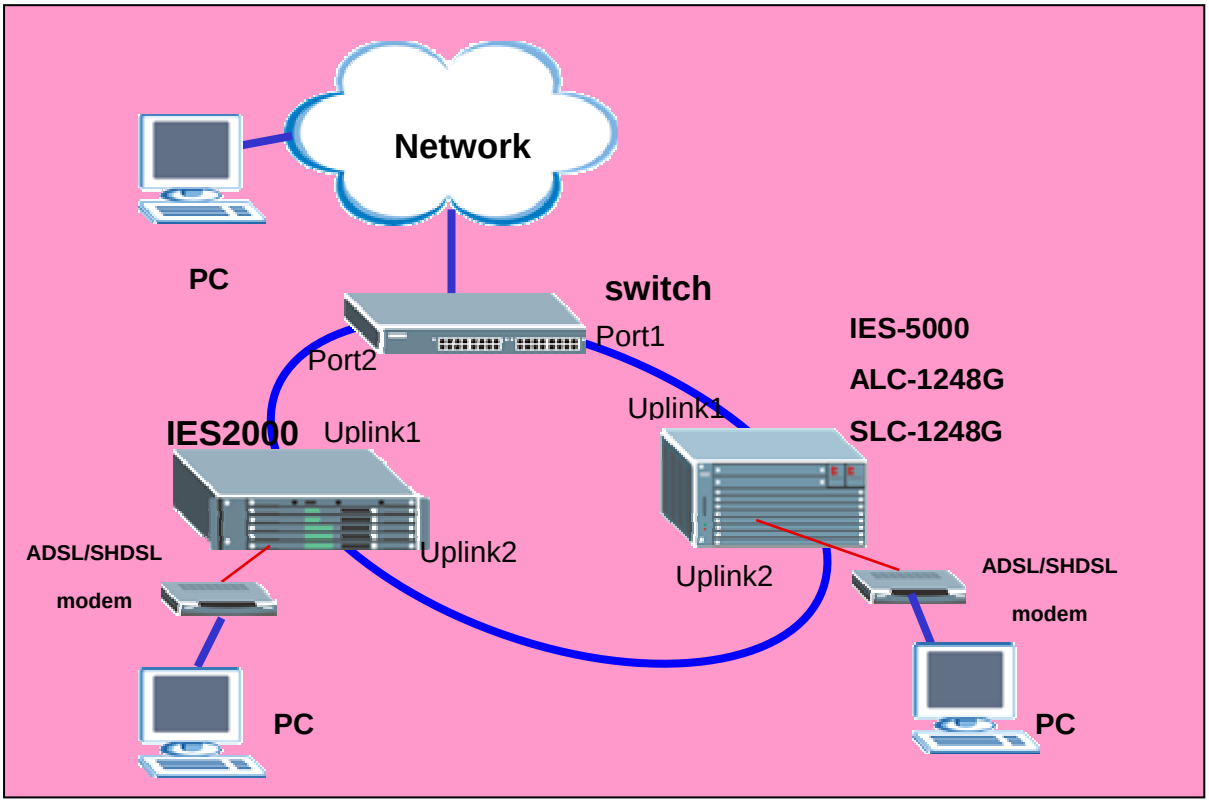
Setting up the Ring Environment

The Ring topology is used to guarantee the network being normal even if one link between two device broken. So, in ring topology, the network will work well if one link is broken. In Ring Topology, you must enable RSTP/STP to prevent the loop issue.



How to set up a Ring Environment.

We set up Ring environment with one IES-5000, one IES-2000 and one ES-4024. A PC behind IES can connect the PC in the network even one of the links broken. Following sections will describe the detailed procedures to set up the environment.

1. IES-5000 settings

1.1 Enable Spanning Tree protocol on Ethernet ports

Configure Spanning Tree Protocol settings.

Click **Active** to enable Spanning Tree Protocol. Then enable it on port 1 and port 2.

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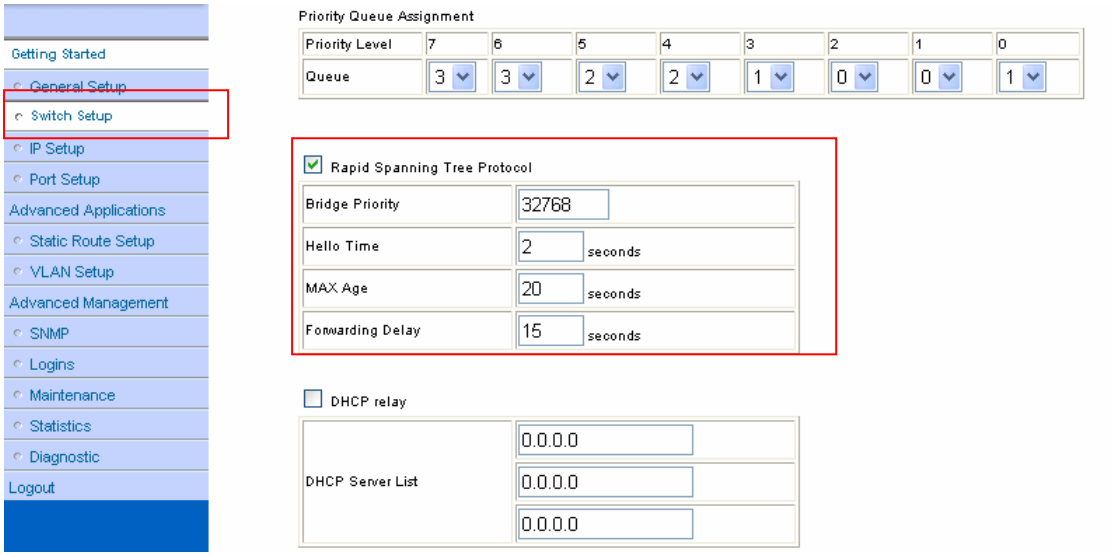
CI command:

TGE1> sys sw rstp enable
TGE1> sys sw rstp port enable 1
TGE1> sys sw rstp port enable 2

2. Setup IES-2000

2.1 Enable Spanning Tree protocol

Click **Switch Setup** in the navigation panel to display configuration screen as shown. Then check **Spanning Tree Protocol** to enable it.



2.2 Enable Spanning Tree protocol on Ethernet ports

Click **Port Setup** in the navigation panel to display configuration screen as shown. Click **msc** to display MSC card Port setup.

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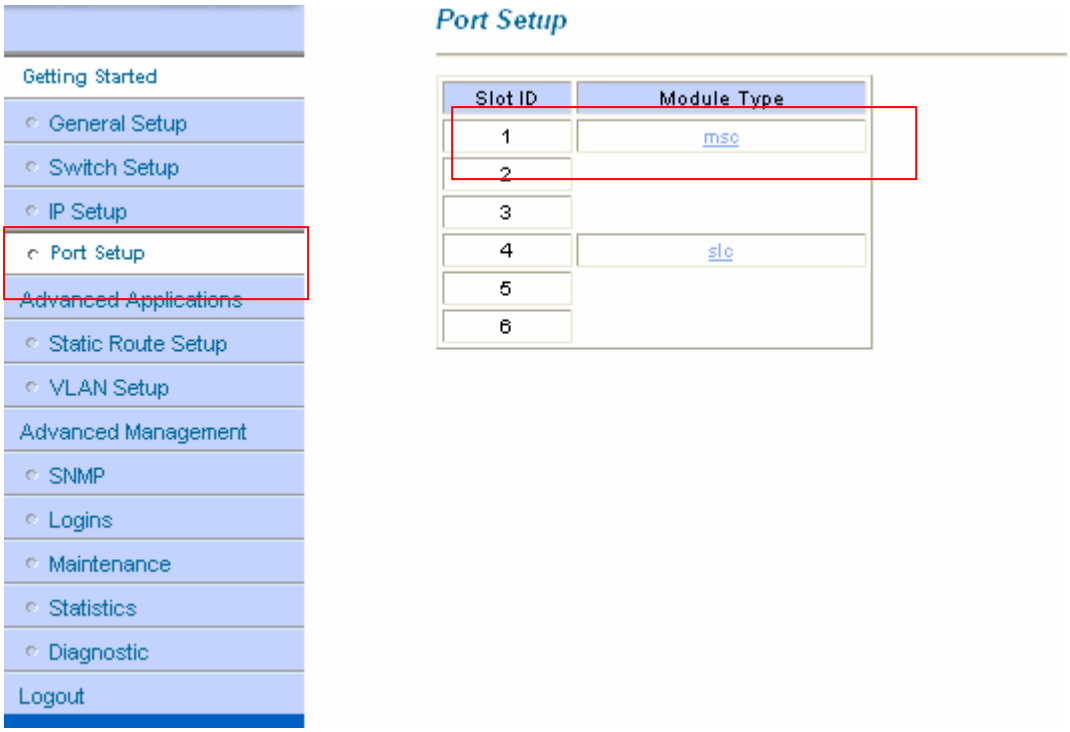
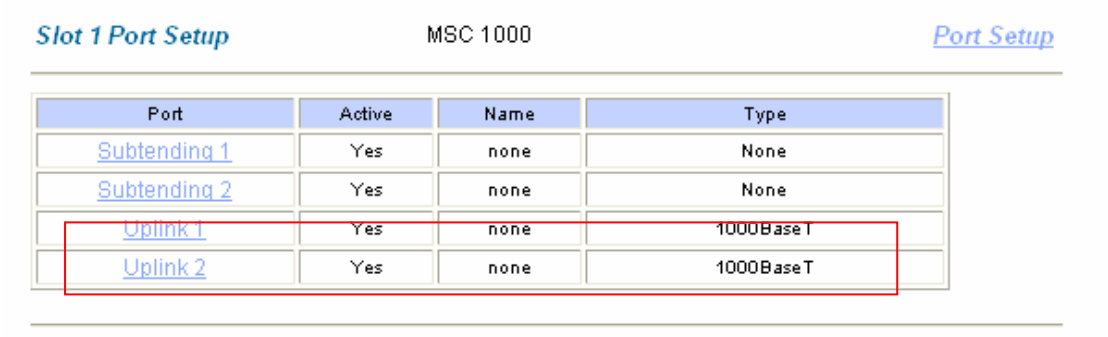


Click **Uplink2** to set up this port.



Check **Spanning Tree Protocol** to enable it.

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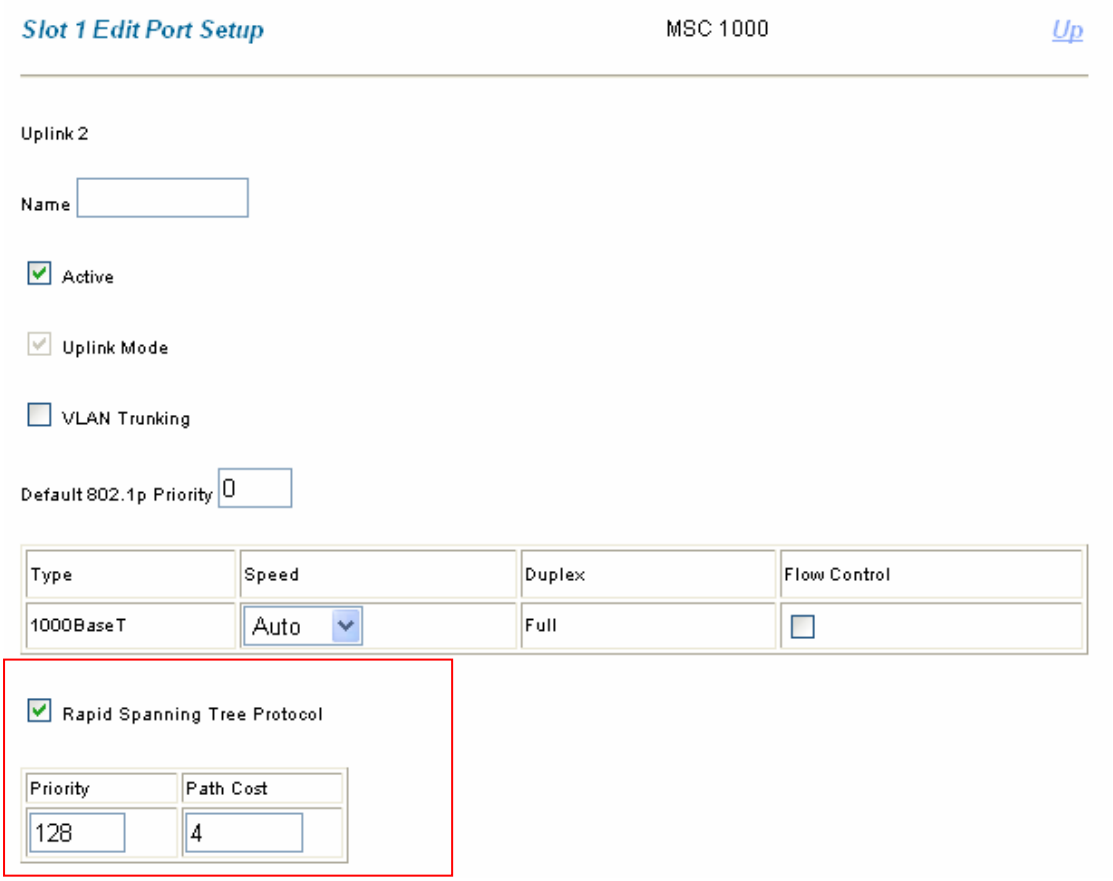

Take the same procedures with Uplink1. Please see the following figure.

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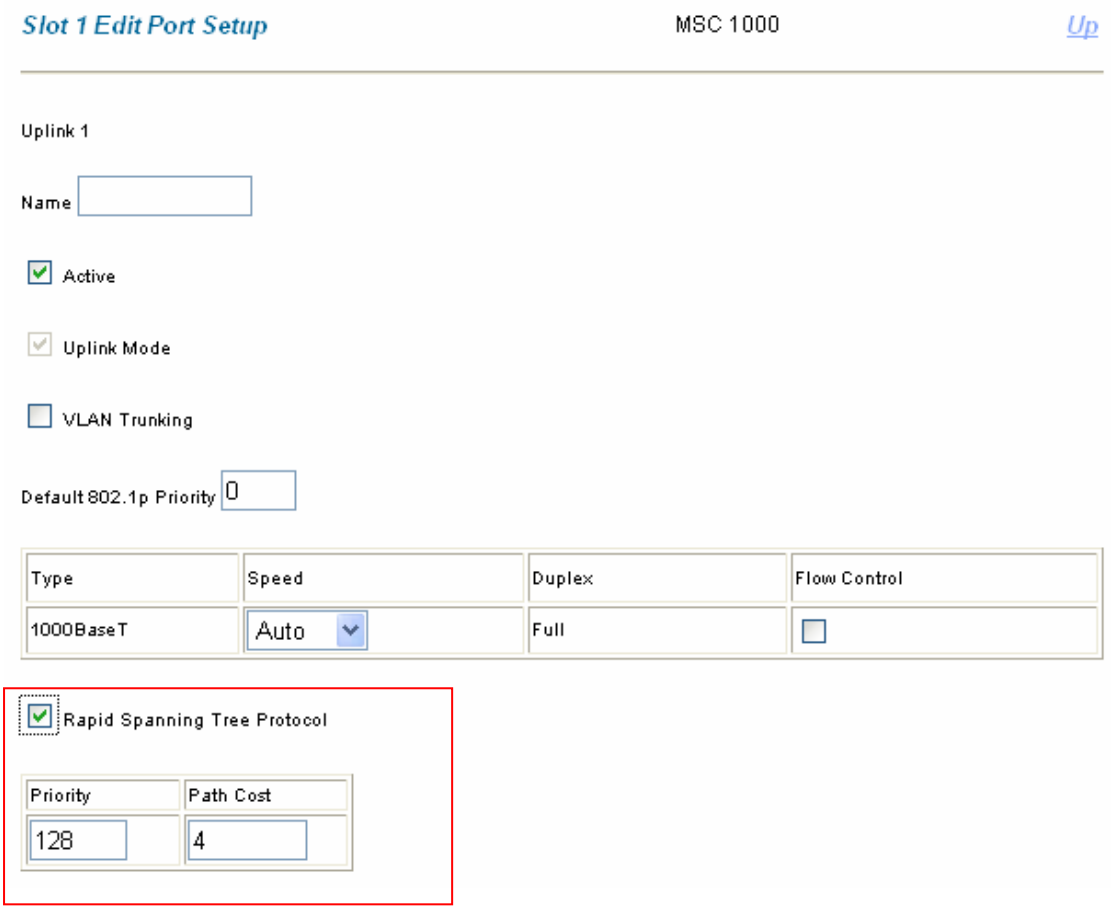
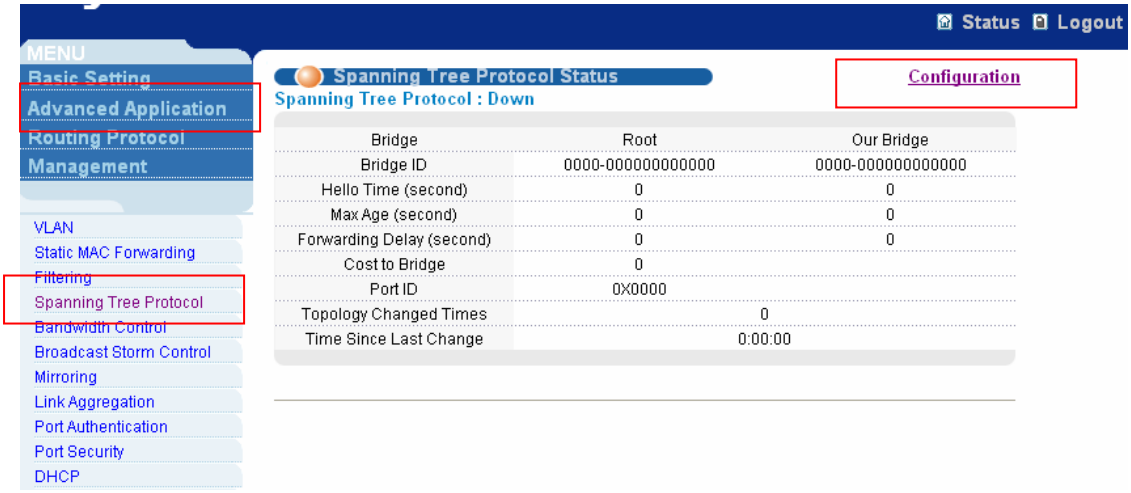


3. Setup ES-4024

3.1 Enable Spanning Tree protocol on Ethernet ports

Click **Advanced Application**, **Spanning Tree Protocol** in the navigation panel to display configuration screen as shown. You will see the **Spanning Tree Protocol Status** page. Click **Configuration** to configure panning tree protocol settings.



Click **Active** to enable Spanning Tree Protocol. Then enable it on **Port 1** and **Port 2**.

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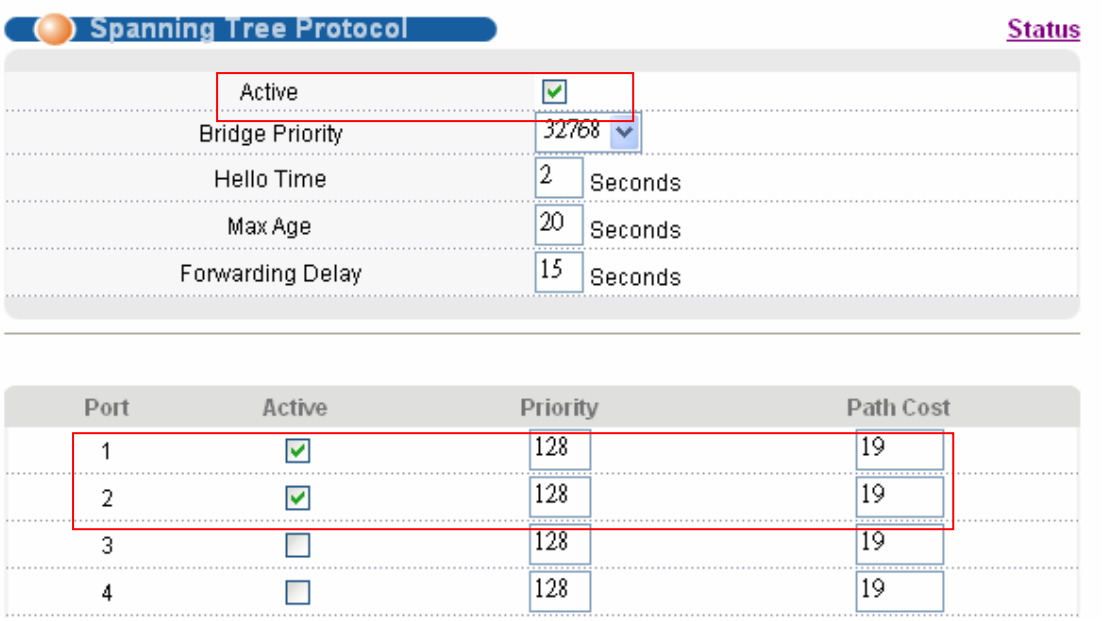
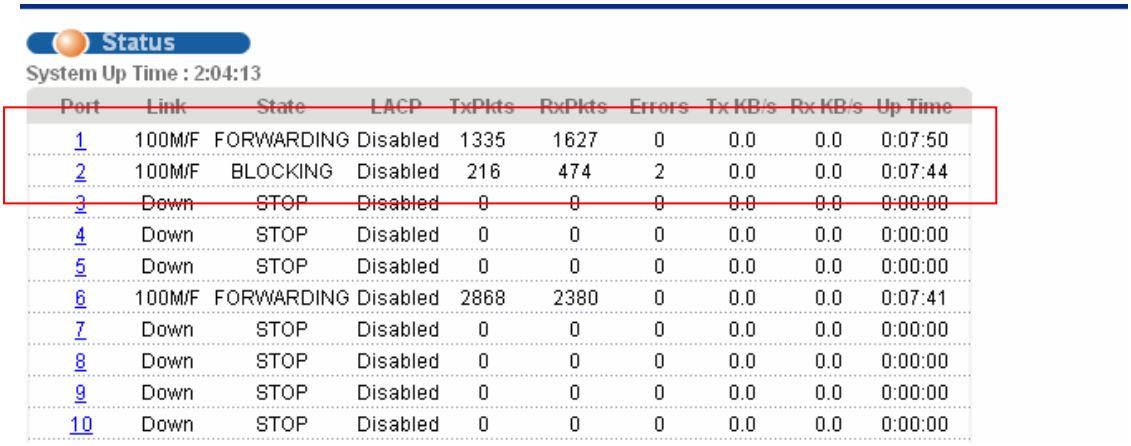


4. Results

We can see the link between port 2 of ES-4024 and Uplink1 of IES-2000 will be blocked as shown after we connect.


Status
System Up Time : 2:04:13
Port Link State LACP TxPkts RxPkts Errors Tx KB/s Rx KB/s Up Time
1 100M/F FORWARDING Disabled 1335 1627 0 0.0 0.0 0:07:50
2 100M/F BLOCKING Disabled 216 474 2 0.0 0.0 0:07:44
3 Down STOP Disabled 0 0 0 0.0 0.0 0:00:00
4 Down STOP Disabled 0 0 0 0.0 0.0 0:00:00
5 Down STOP Disabled 0 0 0 0.0 0.0 0:00:00
6 100M/F FORWARDING Disabled 2868 2380 0 0.0 0.0 0:07:41
7 Down STOP Disabled 0 0 0 0.0 0.0 0:00:00
8 Down STOP Disabled 0 0 0 0.0 0.0 0:00:00
9 Down STOP Disabled 0 0 0 0.0 0.0 0:00:00
10 Down STOP Disabled 0 0 0 0.0 0.0 0:00:00

After we remove the cable between port 1 of IES-5000 and port 1 of ES-4024, the connection still exists. We can remove any one of the cable. That will not affect the connection. You can see the blocking port will become forwarding port.

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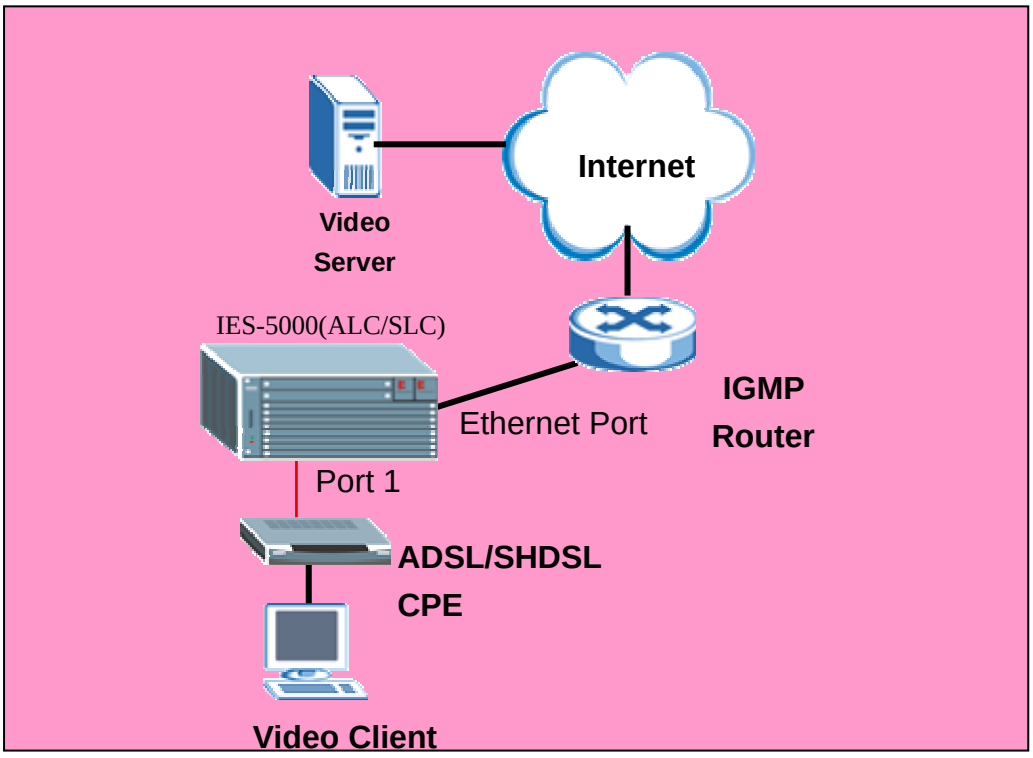
Status

System Up Time : 2:11:04

Port	Link	State	LACP	TxPkts	RxPkts	Errors	Tx KB/s	Rx KB/s	Up Time
1	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00
2	100M/F	FORWARDING	Disabled	217	683	2	0.0	0.0	0:01:44
3	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00
4	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00
5	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00
6	100M/F	FORWARDING	Disabled	3278	2698	0	0.0	0.0	0:14:32
7	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00

Setting up the IGMP Snooping/IGMP Filtering

Without IGMP snooping multicast traffic is treated in the same manner as broadcast traffic, that is, it is forwarded to all port. With IGMP snooping, multicast traffic of a group is only forwarded to ports that have members of that group. IGMP snooping generates no additional network traffic, allowing you to significantly reduce multicast traffic passing through the IP-DSLAM. IGMP filtering is for allowing a port to join some specific IGMP groups. This can be applied in Video service providers. They can only open some specific channels (groups) to specific ports.



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How to set up IGMP snooping/IGMP filtering

Here, we only set up the IES-5000 to support IGMP snooping and IGMP filtering. Please refer to the user guide of the Video Server and the subscriber device. We assume the video server provides three channels, movie 1 on 240.10.10.8 group, movie 2 on 240.10.10.9 group and movie 3 on 240.10.10.10 group. And we assume the subscriber want to subscribe two channel, movie 1 and movie 2. If we don't enable the IGMP snooping, every one can see all movies. If we don't set the IGMP filtering on the port, the subscriber behind the port will receive all movies.

1. IES-5000 settings

1.1 Enable IGMP Snooping

Enable IGMP Snooping to switch on the IGMP Snooping function.

CI command:

TGE1> multicast igmp enable snooping

1.2 Set up IGMP Filtering

If we don't set up IGMP filtering, the subscriber will receive all the movies. We set up a IGMP filter Profile and apply it to specific port to limit the channels subscriber can see.

In this case we only allow the subscriber to join movie 1 and movie 2. That means only the groups 240.10.10.8 and 240.10.10.9 can be forwarded this subscribed port.

We create a IGMP Filter profile and apply the profile to port 1.Then, we select the **Subscriber1** in **IGMP Filter Profile**. And save the configurations letting the setting to take effect.

CI command:

TGE1> profile igmpfilter set Subscriber1 1 224.10.10.8 224.10.10.9
TGE1> multicast igmpfilter set 7-1 Subscriber1
TGE1> config save

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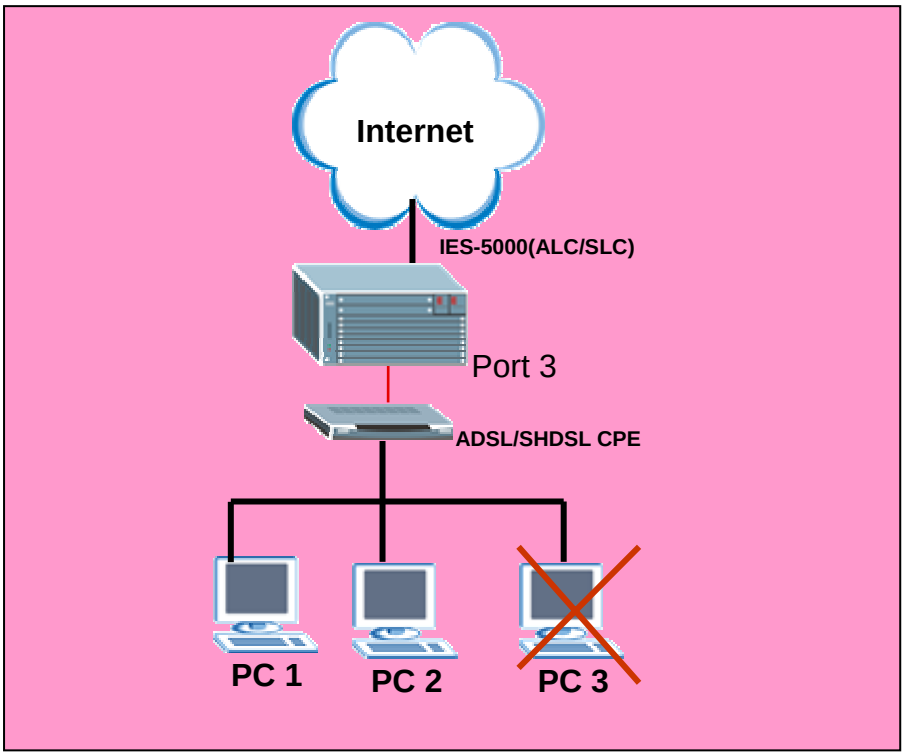
Limit the users behind the certain DSL port

ISP may want to limit the number of PC behind certain DSL port to access the Internet or allow PCs with specific MAC address to access the Internet. They can easily to achieve this with Port Security and MAC filter features.



How to set up MAC Filter/Port Security

Here, we will set up an environment to allow PCs with certain MAC address and the number of PCs behind port 3 to access the Internet.

1. IES-5000 settings

1.1 Set up MAC filter

Enable the MAC filter for port 3, input the MAC address you allow to access the Internet. Save the configuration to take effective.

Only the MAC addresses listed here can access the Internet behind certain ports.

CI command:

TGE1> lcman port macfilter enable 7-3

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TGE1> lcman port macfilter set 7-3 00:a0:c5:12:34:56
TGE1> lcman port macfilter set 7-3 00:a0:c5:77:88:99
TGE1> config save

1.2 Set up Port Security

Input the MAC address number you want to limit to access the Internet. Note that the MAC filter and Port security can't be used at the same time.

Here we allow only 1 user to access Internet on slot 7 port 3.

CI command:

TGE1> lcman port maccount enable 7-3
TGE1> lcman port maccount set 7-3 1
TGE1> config save

DHCP Relay Option 82 Application

ISP may want to limit the number of IP address or deliver some specific IP addresses according to certain DSL port, VLAN ID and option 82 string. They can easily to achieve this with DHCP Relay Option 82 feature and a DHCP server supporting Option 82 function.

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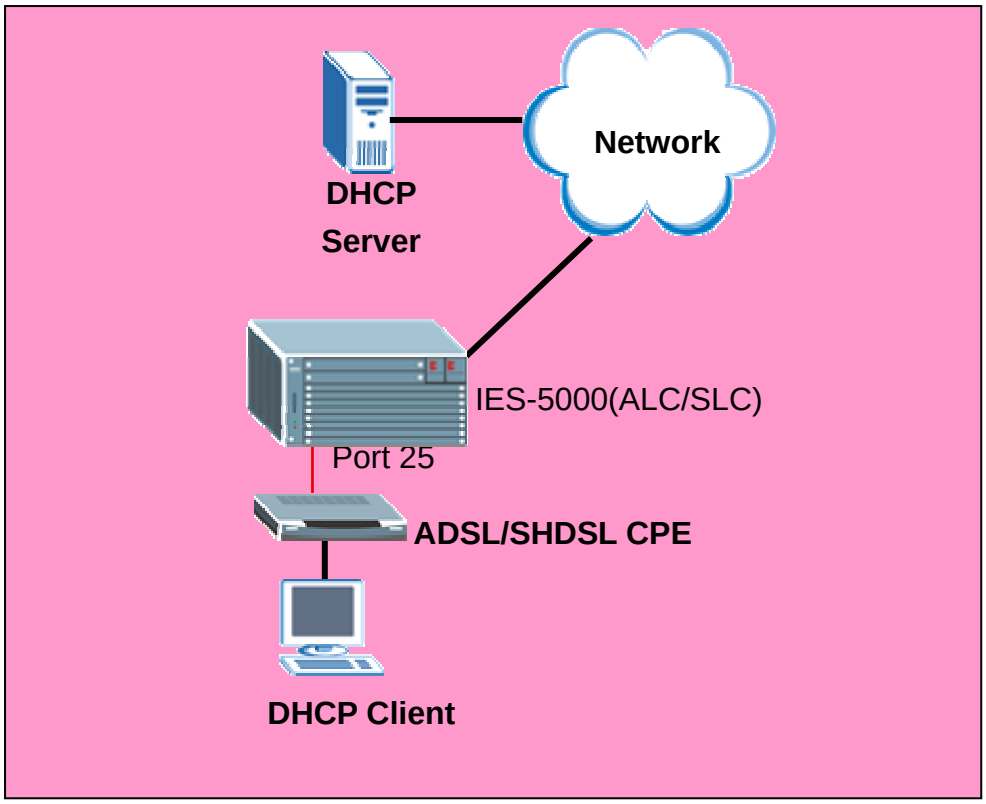

How to set up DHCP Relay Option 82 Environment

Here, we will set up an environment to allow a PC get DHCP IP address in specific IP pool according to its DSL port, VLAN ID and the option 82 string. In this case, the PC is behind 25th DSL port and the option 82 string is a string "5000". We use the IP Commander as DHCP server. Its IP is 192.168.1.99 and the IP pool is between 192.168.1.201 and 192.168.1.203 for VID=1, DSL port=25 and the option 82 string is "5000".

1. IES-5000 settings

Enable the DHCP relay and Option 82 function including the IP address of DHCP server. The IP address is 192.168.1.99 in our case. Also, enter "5000" as the Option 82 string.

CI command:

TGE1> ip dhcprelay enable
TGE1> ip dhcprelay relay enable
TGE1> ip dhcprelay server 1 192.168.1.99
TGE1> ip dhcprelay relayinfo add 5000

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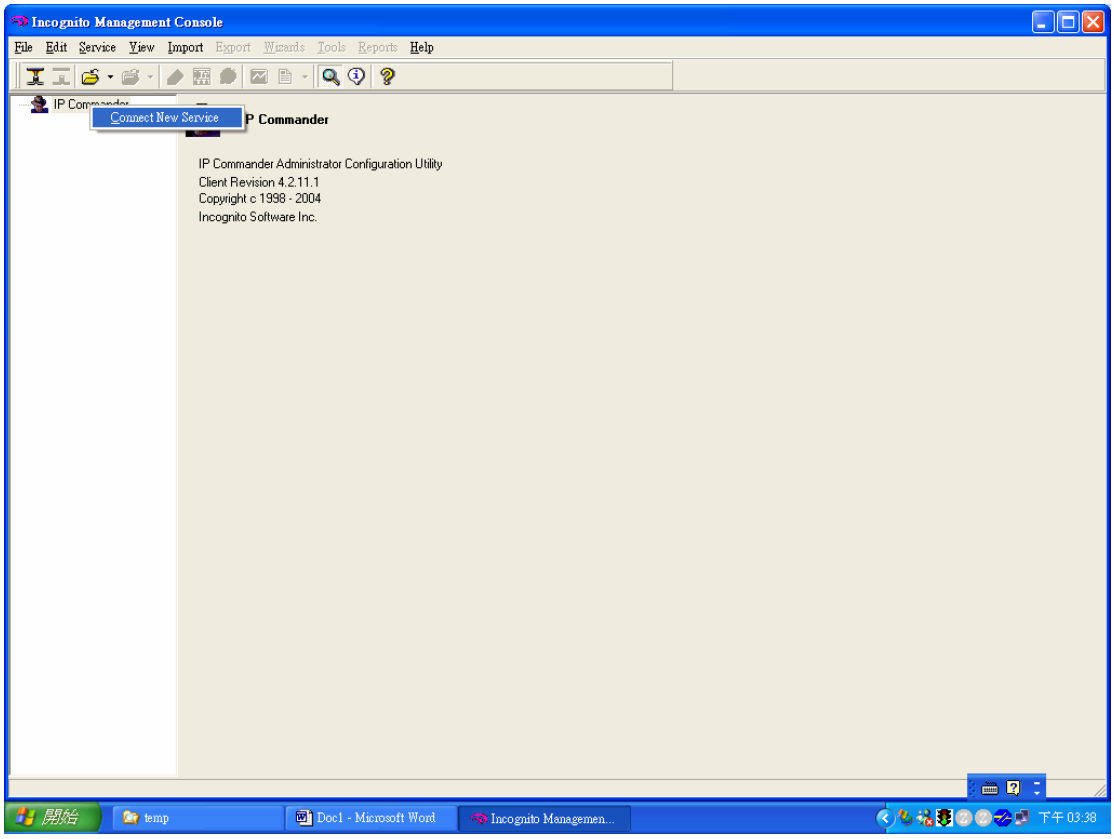
2. CPE settings

Connect CPE to the 25th DSL port. Please see former applications for Detailed settings.

3. IP Commander settings

Open IP Commander. Right click “IP commander and then click “**connect new server**”.



Input the DHCP IP address or domain name and click “ok”. Our IP is 192.168.1.99.

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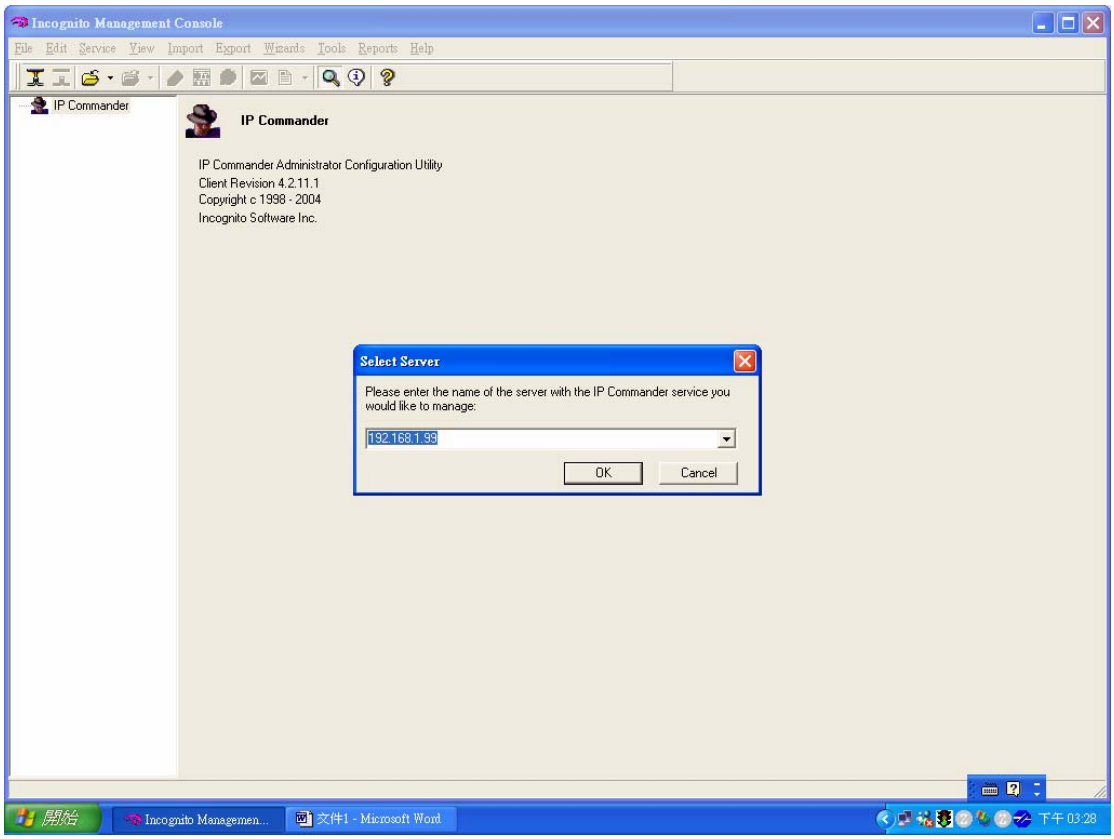
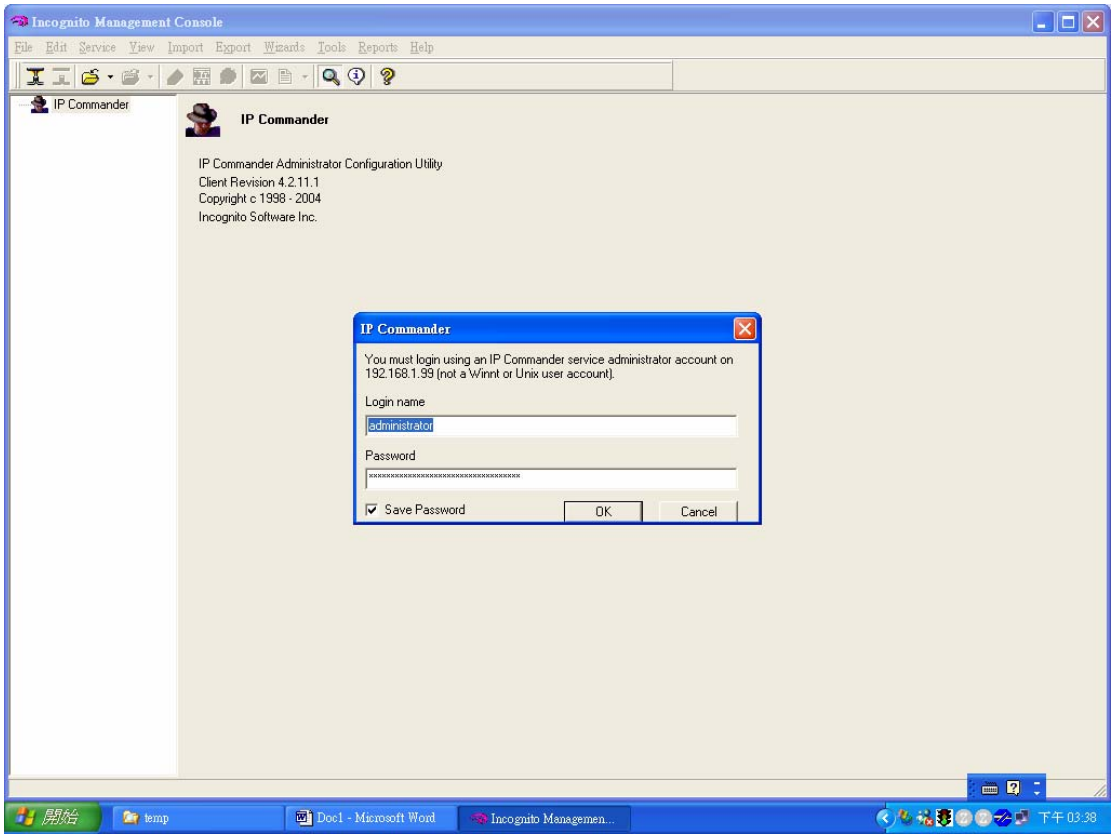


Input user name and password. The default user name is “administrator” and password is “incognito”.



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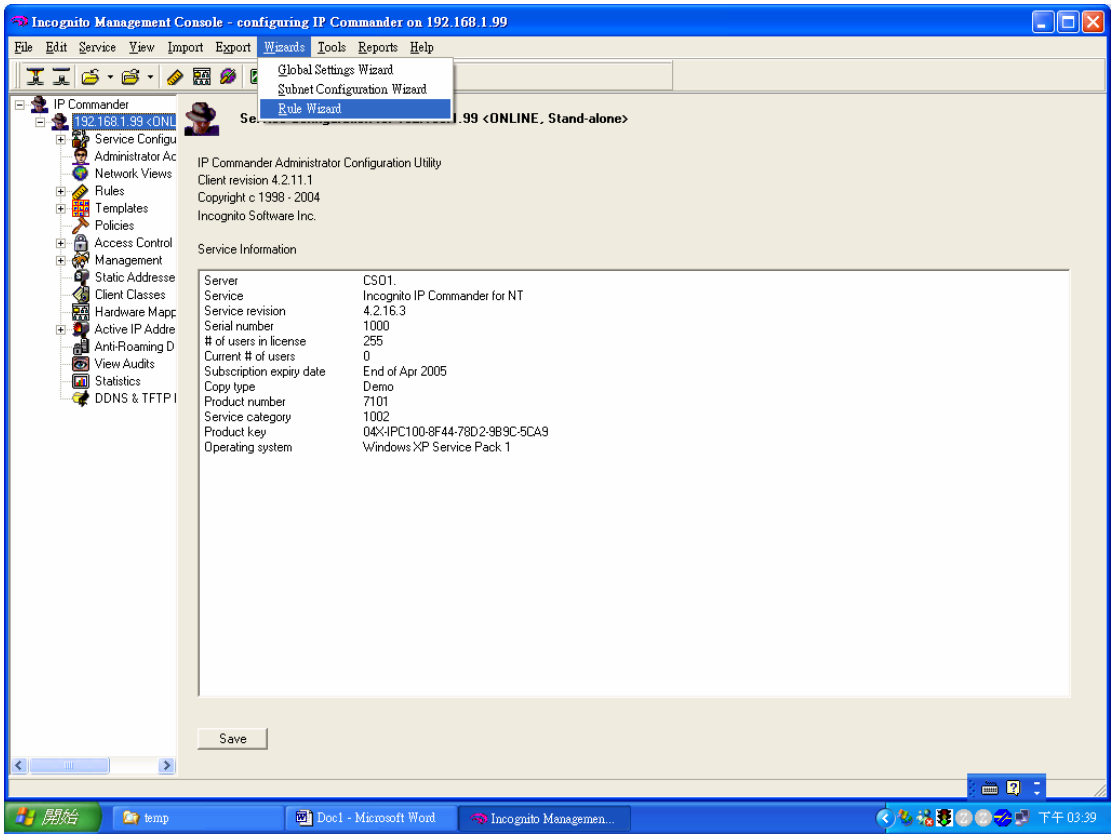
It will bring up the following screen, please make sure that your DHCP is in "**online**" status. Then click "**wizard**" in the top tool bars and select "**rule wizard**".



Give a name and description to the new rule.

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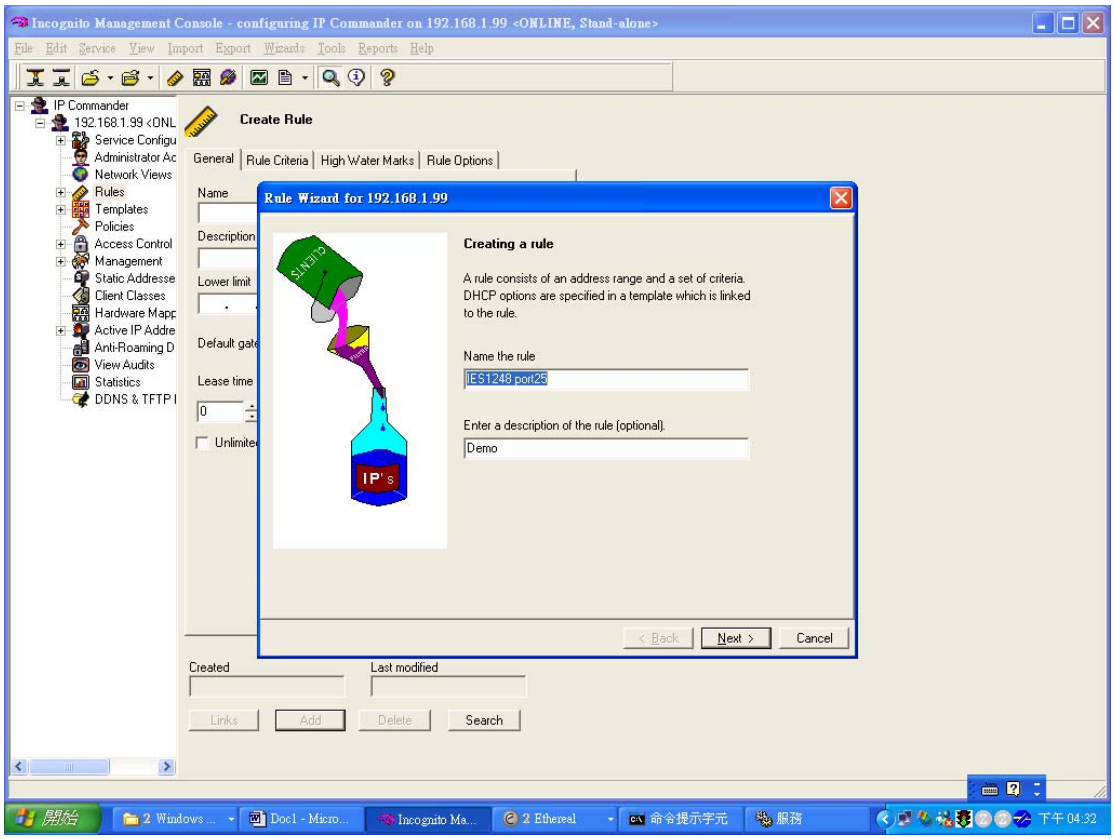
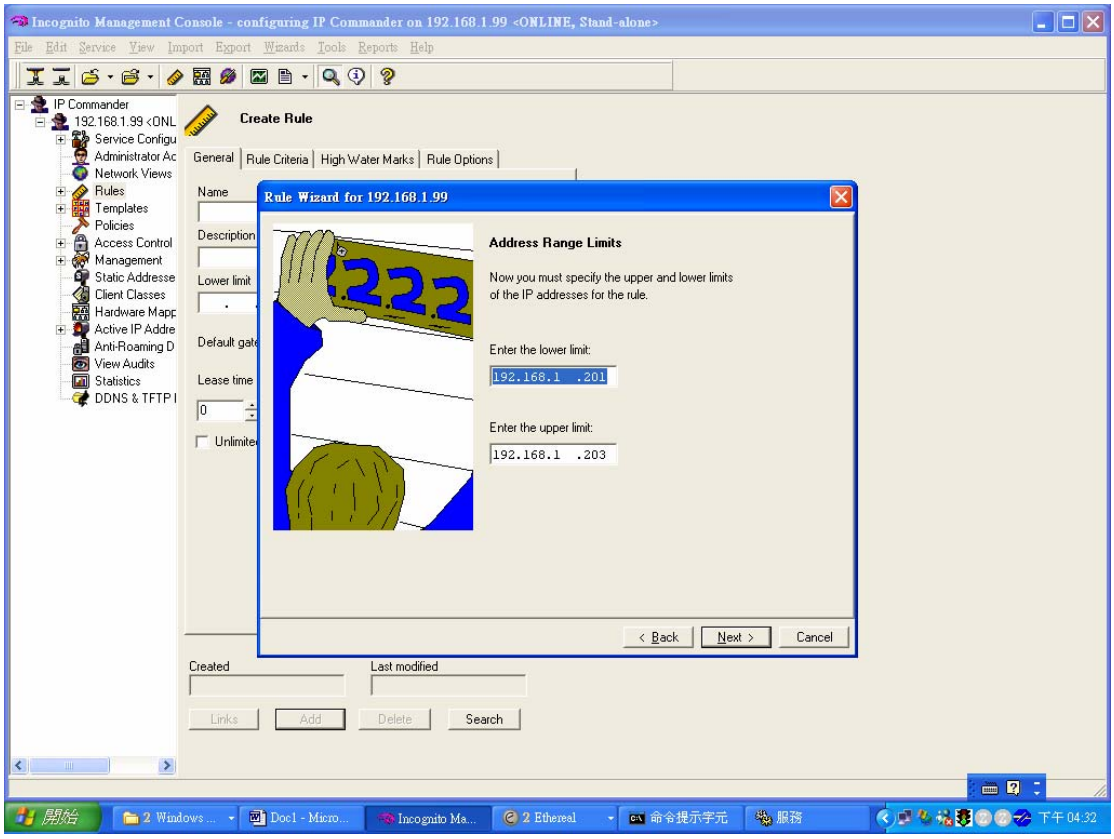

Incognito Management Console - configuring IP Commander on 192.168.1.99 <ONLINE, Stand-alone>
Create Rule
Rule Wizard for 192.168.1.99
Creating a rule
A rule consists of an address range and a set of criteria. DHCP options are specified in a template which is linked to the rule.
Name the rule
IES1248 port25
Enter a description of the rule (optional).
Demo
< Back
Next >
Cancel

Assign a range of IP addresses or just one IP address to this rule. In our case, we set the IP pool from 192.168.1.201 to 192.168.1.203.


Incognito Management Console - configuring IP Commander on 192.168.1.99 <ONLINE, Stand-alone>
Create Rule
Rule Wizard for 192.168.1.99
Address Range Limits
Now you must specify the upper and lower limits of the IP addresses for the rule.
Enter the lower limit:
192.168.1 .201
Enter the upper limit:
192.168.1 .203
< Back
Next >
Cancel

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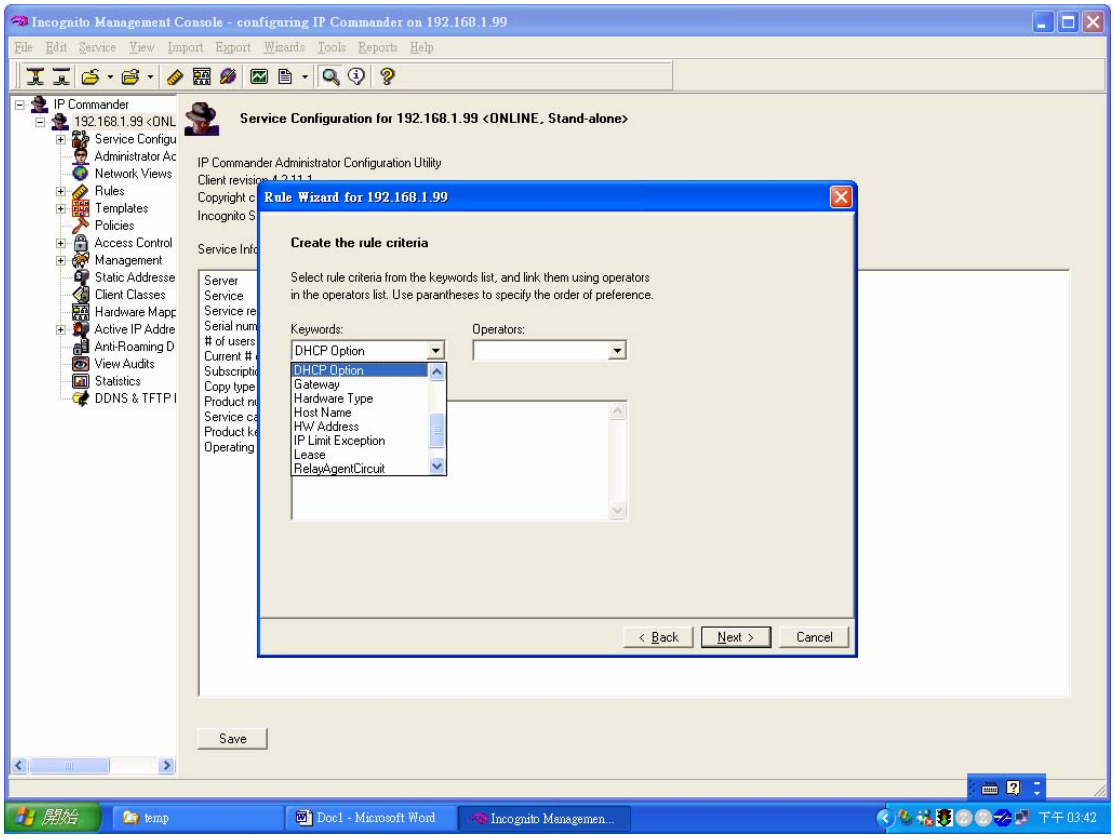
After input IP pool, we select “DHCP Option” in Keywords combobox.



After select the “DHCP Option”, it will pop up “Add DHCP Option Rule” dialog. Select “option 82 Relay Agent Information”, sub-option 1, binary data. For port 25, VLAN 1, “5000”, please key in “0019000131323438” as the key value and click OK. Please note that the first 2 bytes define port number, the second 2 bytes is VLAN ID and the other bytes are the Option 82 string.

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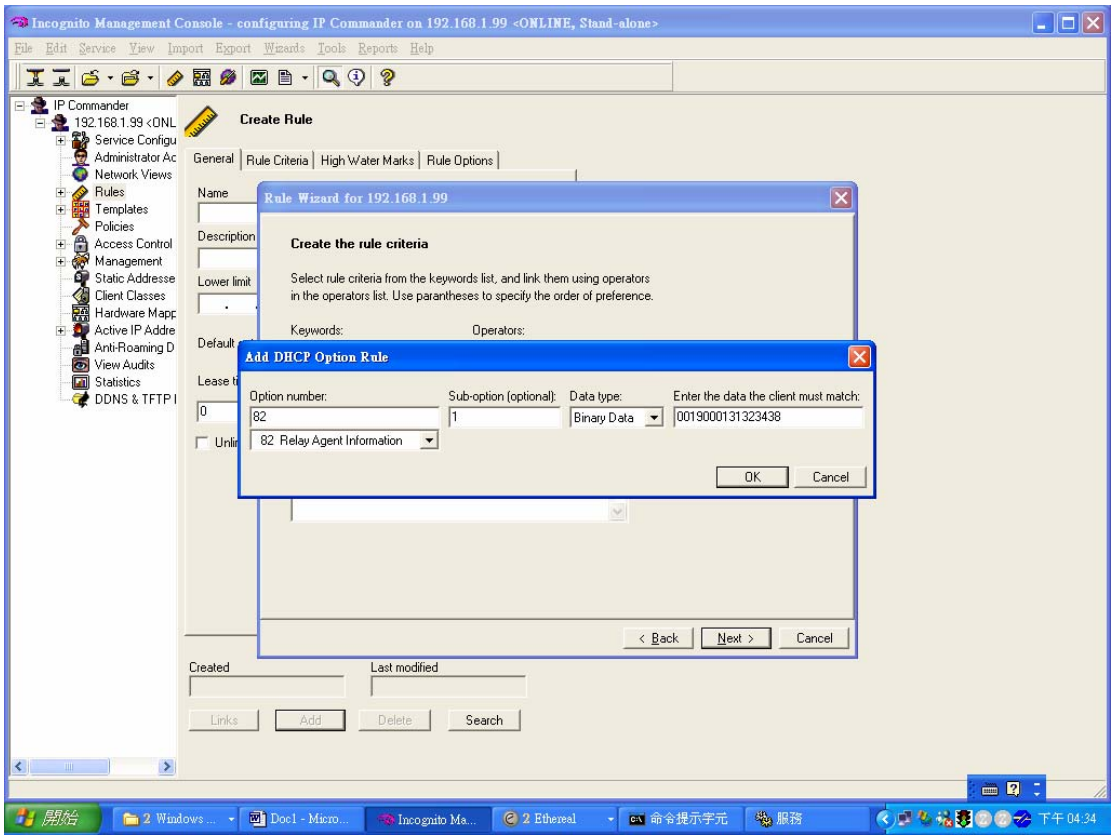
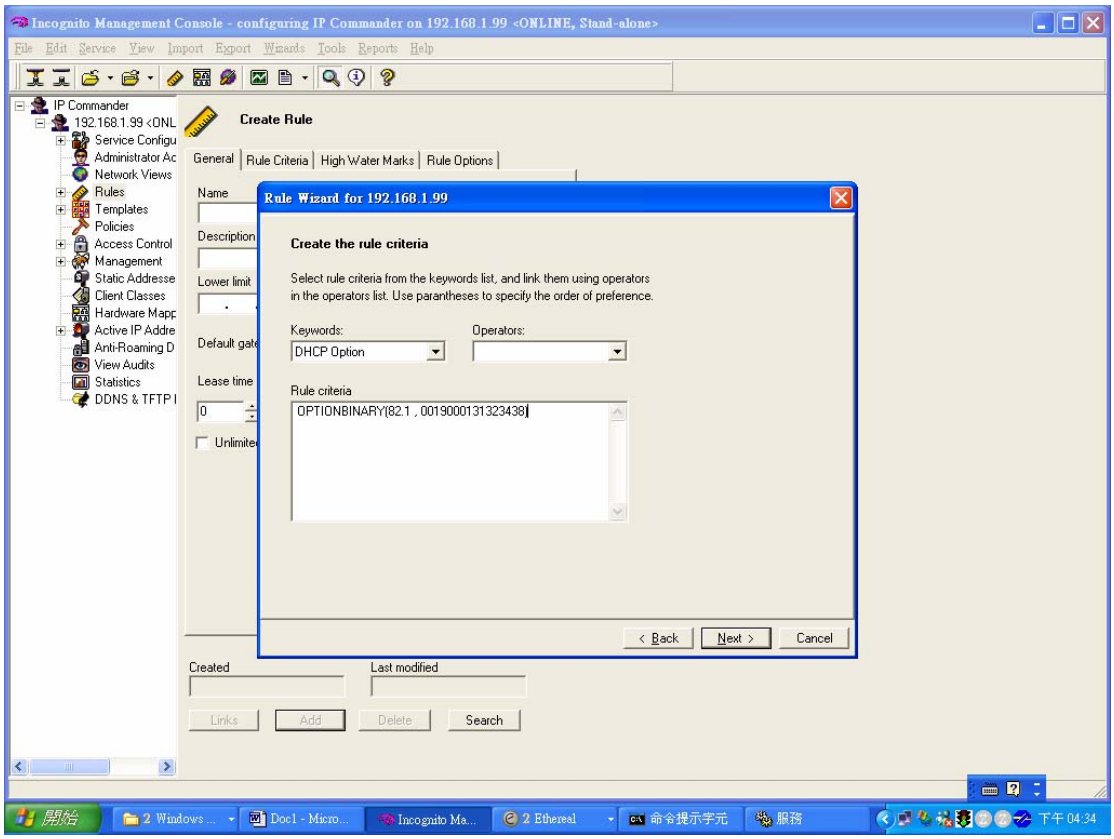


After you finish above step, you will see the following figure.



Then pop up the following screen and you can just press **Next** button.

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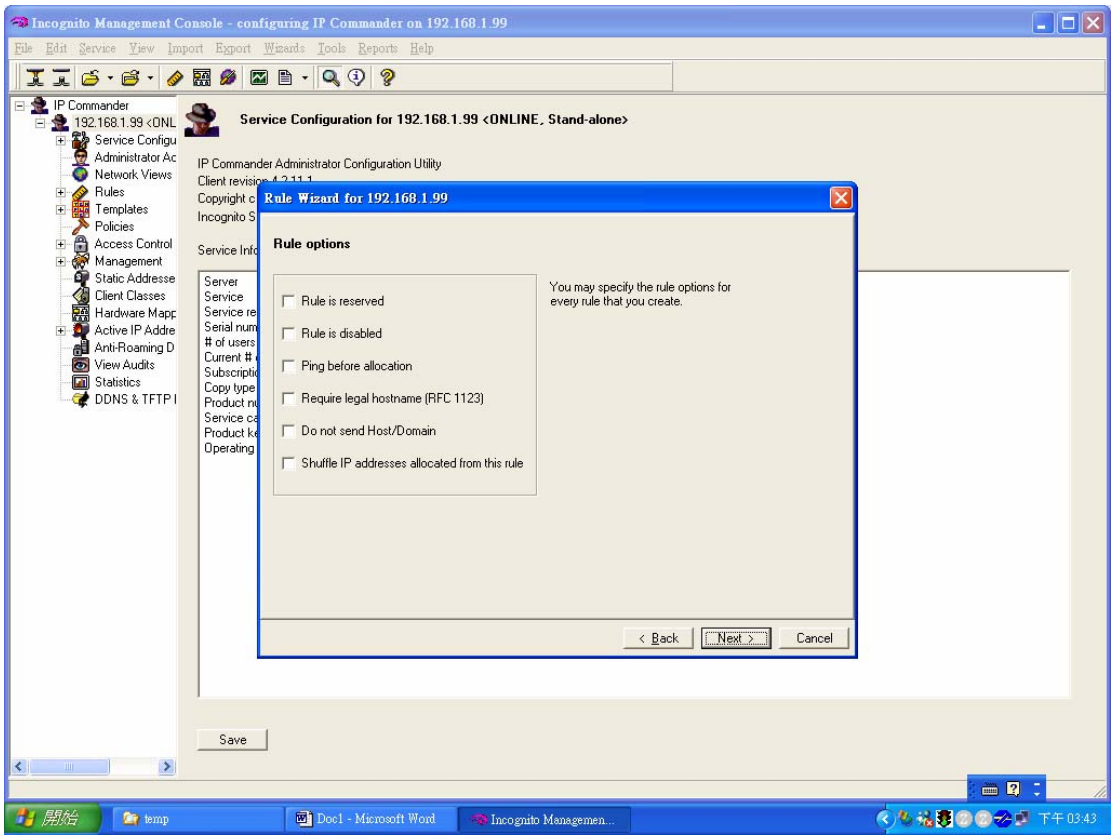
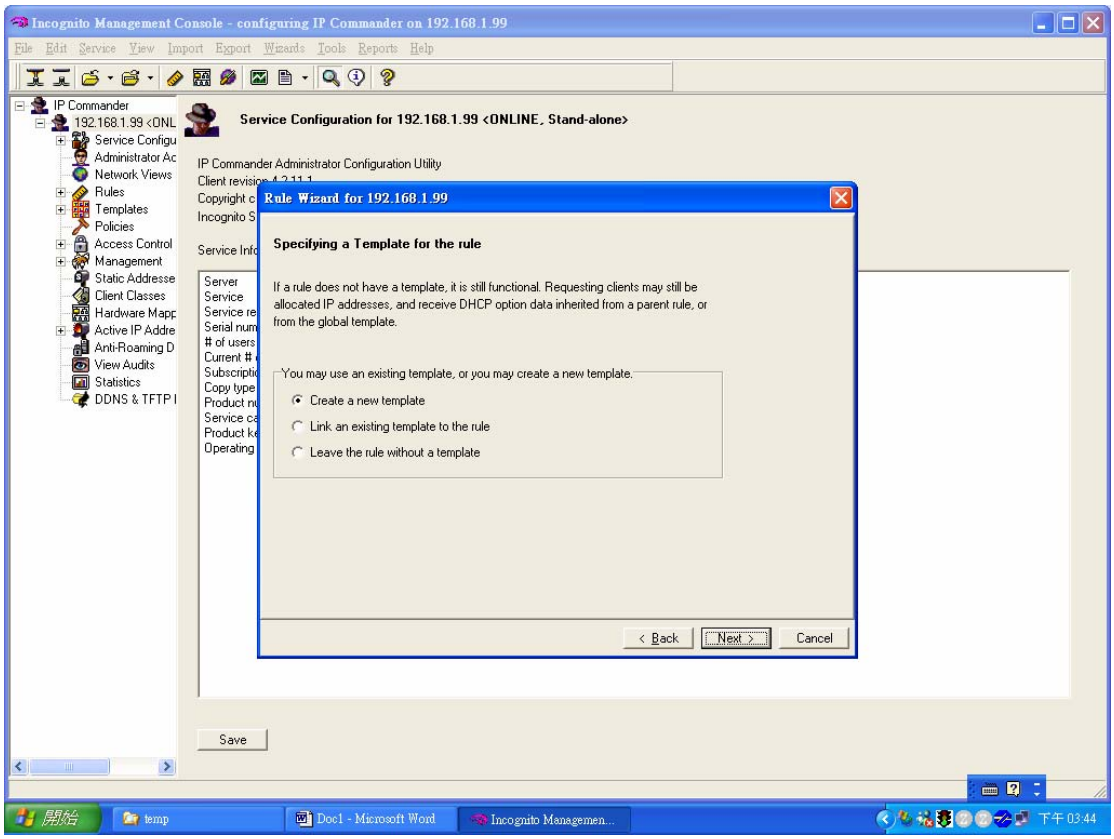

Incognito Management Console - configuring IP Commander on 192.168.1.99
Service Configuration for 192.168.1.99 <ONLINE, Stand-alone>
Rule Wizard for 192.168.1.99
Rule options
Rule is reserved
Rule is disabled
Ping before allocation
Require legal hostname (RFC 1123)
Do not send Host/Domain
Shuffle IP addresses allocated from this rule
You may specify the rule options for every rule that you create.
< Back
Next >
Cancel
Save

Then you can add DHCP template (option) such as gateway, DNS server and so on.


Incognito Management Console - configuring IP Commander on 192.168.1.99
Service Configuration for 192.168.1.99 <ONLINE, Stand-alone>
Rule Wizard for 192.168.1.99
Specifying a Template for the rule
If a rule does not have a template, it is still functional. Requesting clients may still be allocated IP addresses, and receive DHCP option data inherited from a parent rule, or from the global template.
You may use an existing template, or you may create a new template.
Create a new template
Link an existing template to the rule
Leave the rule without a template
< Back
Next >
Cancel
Save

Here we use “192.168.1.1” as gateway IP address of DHCP client PC.

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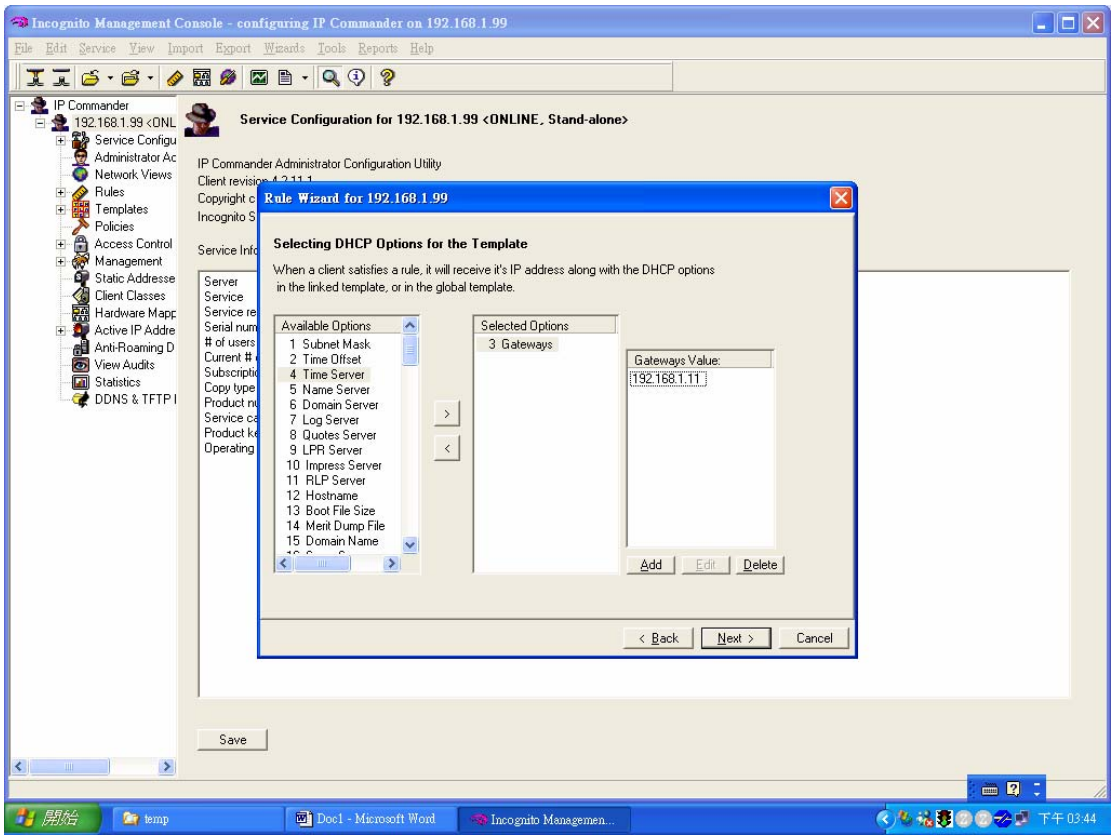
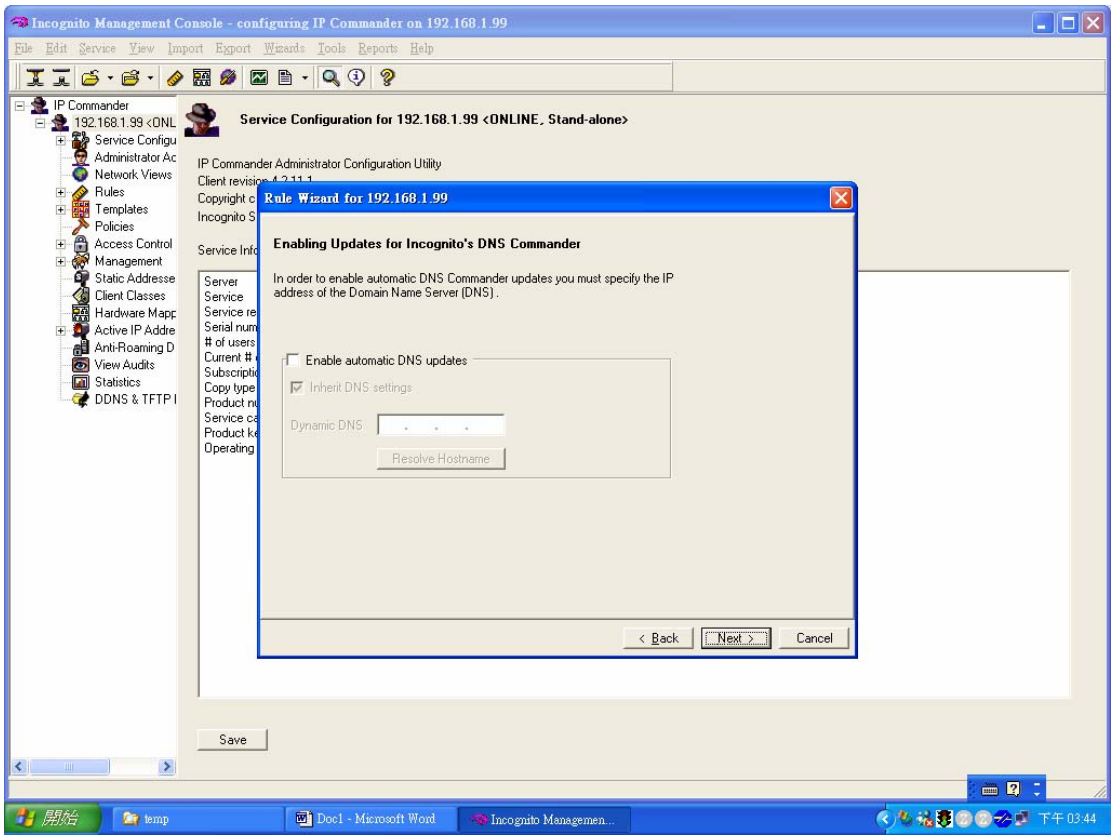


You can apply DDNS service to DHCP server or not.


Incognito Management Console - configuring IP Commander on 192.168.1.99
Service Configuration for 192.168.1.99 <ONLINE, Stand-alone>
Rule Wizard for 192.168.1.99
Enabling Updates for Incognito's DNS Commander
In order to enable automatic DNS Commander updates you must specify the IP address of the Domain Name Server (DNS).
Enable automatic DNS updates
Inherit DNS settings
Dynamic DNS
Resolve Hostname
< Back
Next >
Cancel
Save

The rule creation has been finished.

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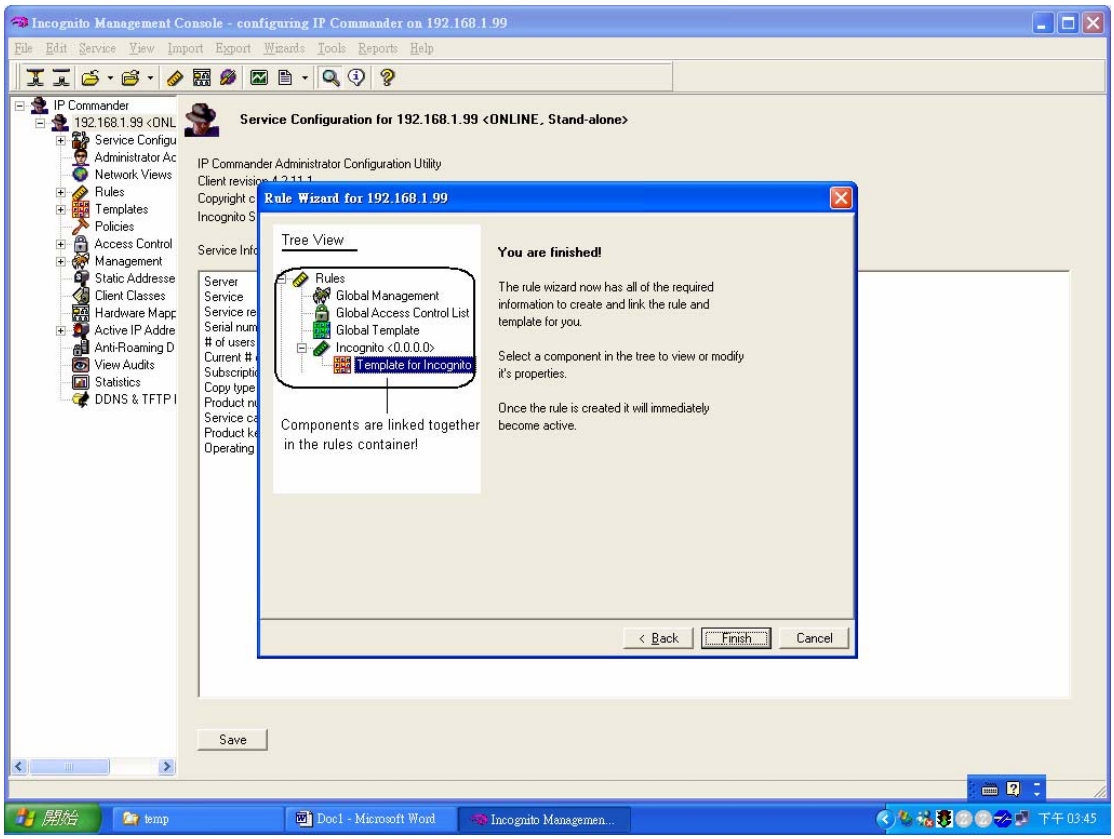

After finishing all above procedures, your PC will get the IP address 192.168.1.201 when you send a DHCP request.

Filter Some Certain Packet

ISP may want to filter some kinds of packets. IES-5000 provide “Packet Filter” function to filter some specific packets, like IP, ARP, DHCP, EAPoL, PPPoE, NETBIOS and IGMP.

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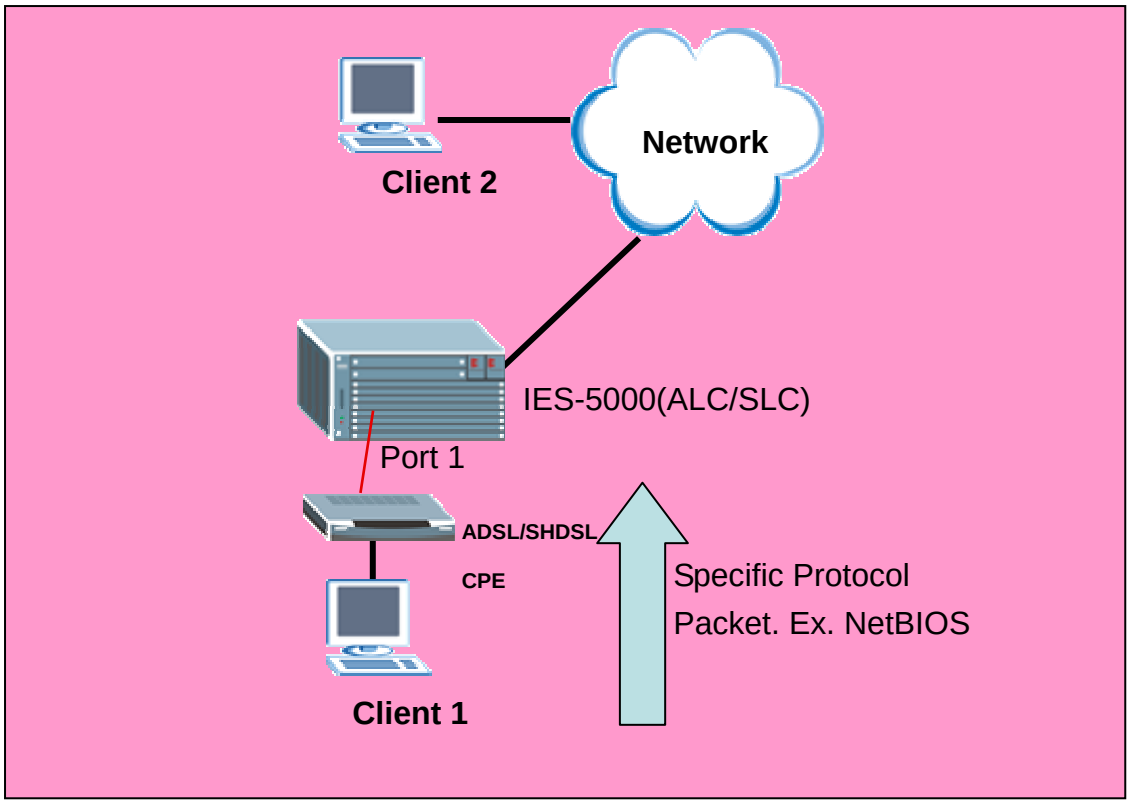

How to Filter Some Specific Packet

Here, we will set up an environment to block NETBIOS protocol packets.

1. IES-5000 ALC-1248G/SLC 1248G settings

Type the following packet filter command with in specific slot-port.

TGE1> lcman port pktfilter set 7-1 netbios

Display the port filter status on slot 7.

CI command:

TGE1> lcman port pktfilter show 7
port filter
----- ----------
7- 1 netbios
7- 2 accept-all
7- 3 accept-all
7- 4 accept-all

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7- 5 accept-all
7- 6 accept-all
7- 7 accept-all
7- 8 accept-all
7- 9 accept-all
7-10 accept-all
7-11 accept-all
7-12 accept-all
7-13 accept-all
7-14 accept-all
7-15 accept-all
7-16 accept-all
7-17 accept-all
7-18 accept-all
7-19 accept-all
7-20 accept-all
7-21 accept-all
7-22 accept-all
7-23 accept-all
7-24 accept-all
7-25 accept-all
7-26 accept-all
7-27 accept-all
7-28 accept-all
7-29 accept-all
7-30 accept-all
7-31 accept-all
7-32 accept-all
7-33 accept-all
7-34 accept-all
7-35 accept-all
7-36 accept-all
7-37 accept-all
7-38 accept-all
7-39 accept-all
7-40 accept-all
7-41 accept-all
7-42 accept-all

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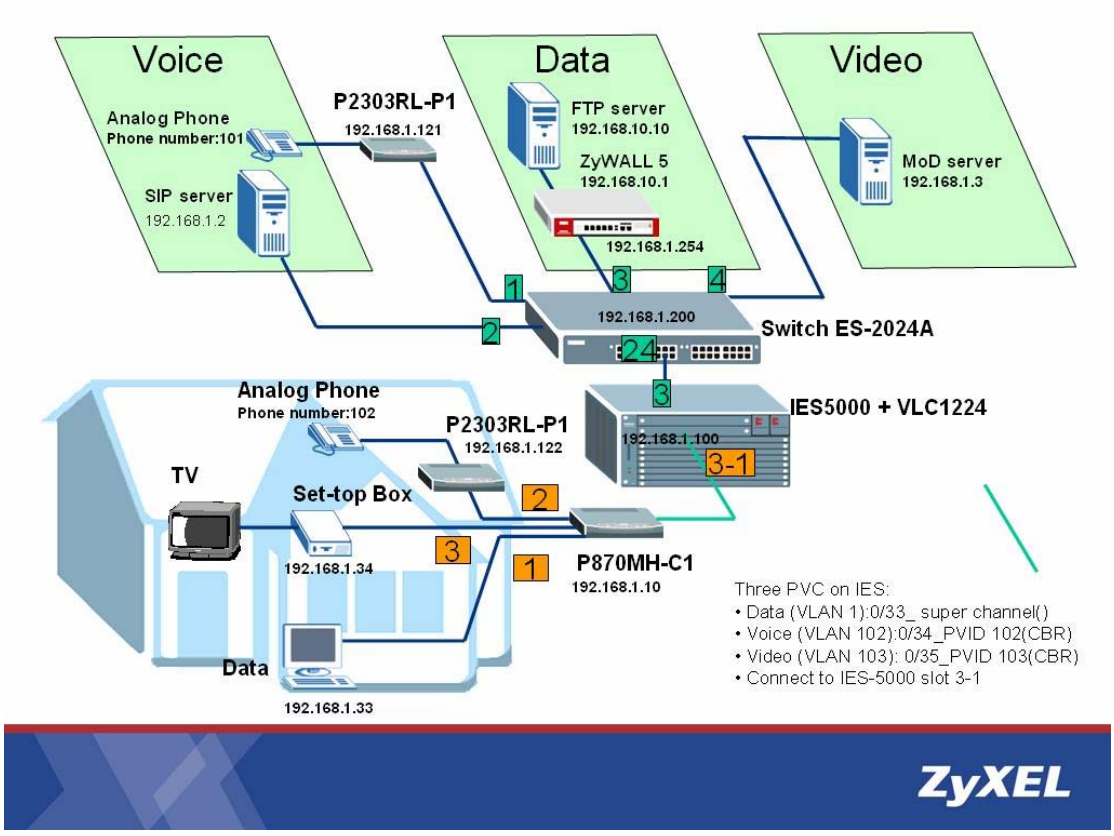
7-43 accept-all
7-44 accept-all
7-45 accept-all
7-46 accept-all
7-47 accept-all
7-48 accept-all
TGE1>

VDSL Application- Triple Play

For the Triple-play scenario, 3 PVCs for multiple services (Data, Voice and Video) on the VDSL port of IES-5000 VDSL line card are to be configured. The IEEE VLAN & 802.1p mechanism is used to guarantee the Voice stream and Video stream running smoothly without interruption. The instructions to configure the IES-1248-71 device are below.



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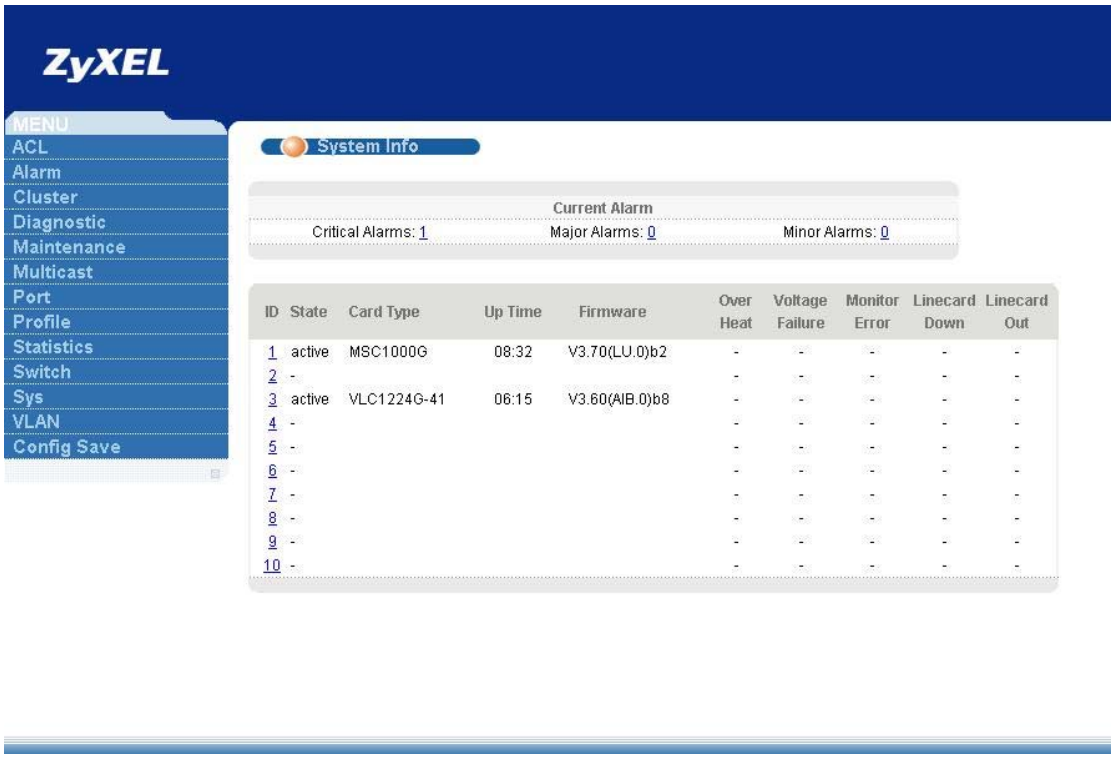
IES5000 Settings

1. Connect to the IES-5000 using Web GUI. The default Inband IP address of IES-5000 is **192.168.1.1**. Enter the default id '**admin**' and password **'1234'** to access the device.


ZyXEL
MENU
ACL
Alarm
Cluster
Diagnostic
Maintenance
Multicast
Port
Profile
Statistics
Switch
Sys
VLAN
Config Save
System Info
Current Alarm
Critical Alarms: 1
Major Alarms: 0
Minor Alarms: 0
ID State Card Type Up Time Firmware Over Heat Voltage Failure Monitor Error Linecard Down Linecard Out
1 active MSC1000G 08:32 V3.70(LU.0)b2 - - - - -
2 - - - - - - - - -
3 active VLC1224G-41 06:15 V3.60(AIB.0)b8 - - - - -
4 - - - - - - - - -
5 - - - - - - - - -
6 - - - - - - - - -
7 - - - - - - - - -
8 - - - - - - - - -
9 - - - - - - - - -
10 - - - - - - - - -

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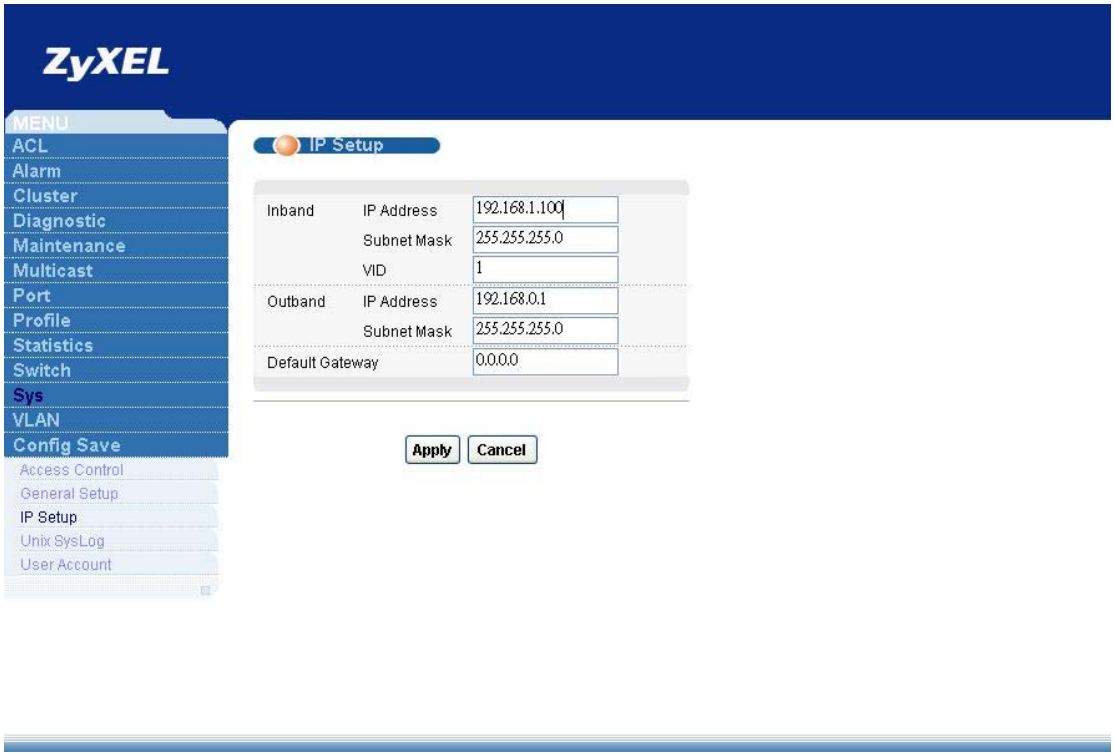
2. Set the IES-5000's IP address to '**192.168.1.100**'.

Click the **Sys > IP Setup**. Type in the IP address **'192.168.1.100'** and subnet mask **'255.255.255.0'.**



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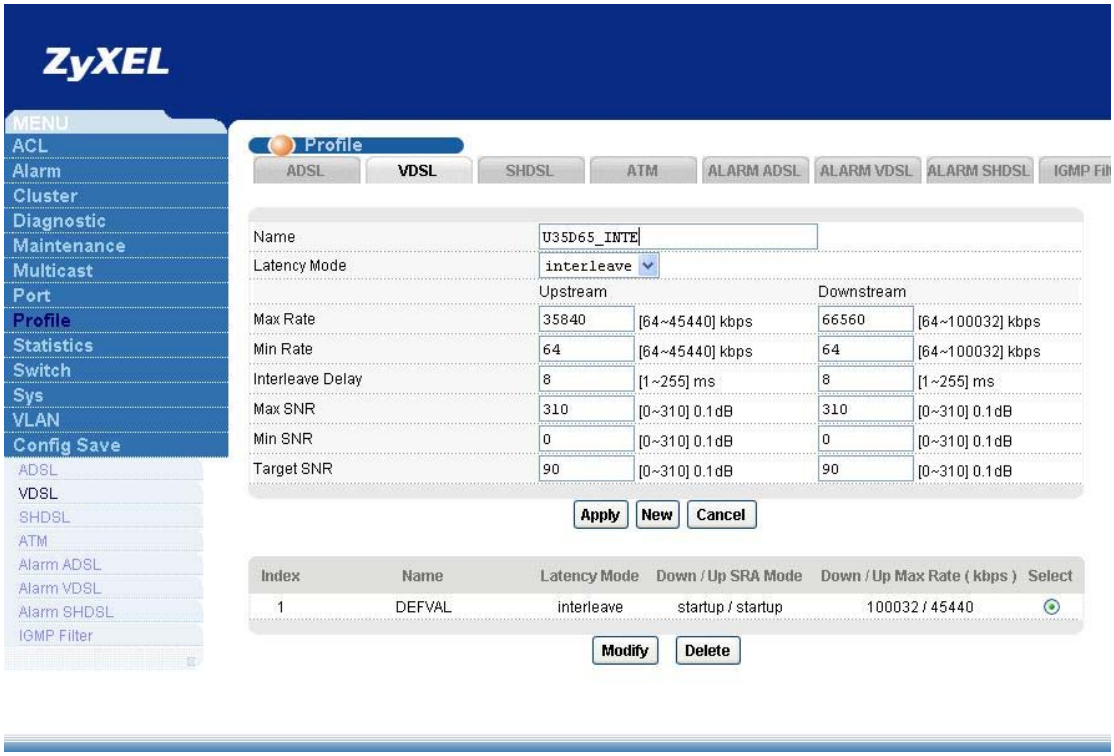
3. Create a VDSL profile

Type in the **Name** and select the **Latency Mode**. Then set the **Max Rate of Downstream/Upstream** (here is an example **'U35D65_INTE'** for 65Mbps/35Mbps line) and the other related parameters.



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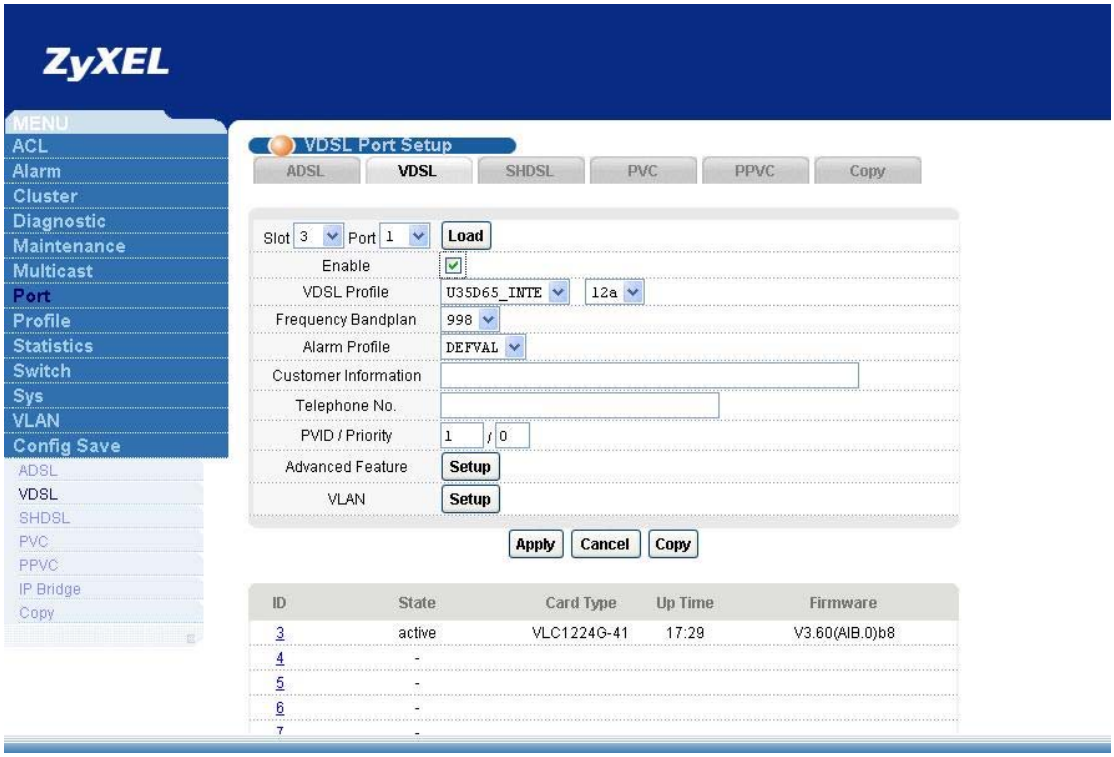
4. Apply the VDSL profile to VDSL ports

Then select to which VDSL ports you would like to apply the VDSL profile you just created.

Click **Port > VDSL**

Choose **Slot 3** and **Port 1**. Check '**Enable'**. Choose **'U35D65_INTE'** in the **VDSL Profile** option. Click **Apply** to take effect.



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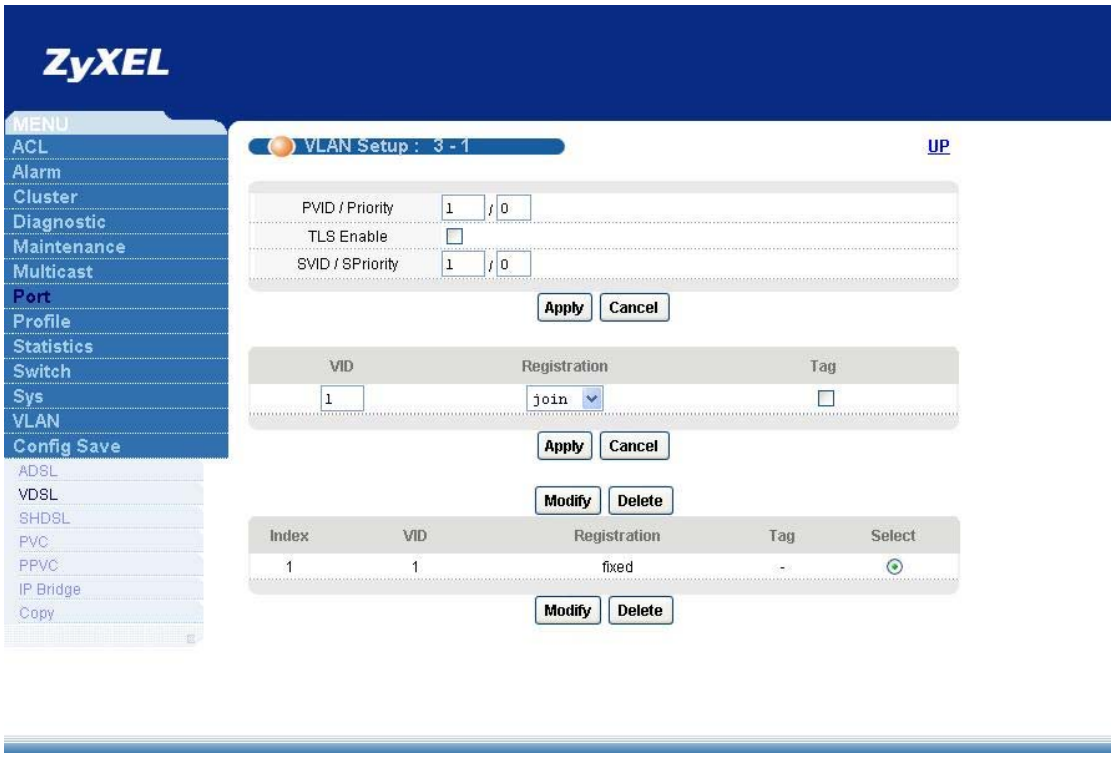
5. Then click **Setup** in the **VLAN** option to create 3 VLANs: VLAN 1 (for DATA), VLAN 102 (for VOICE) and VLAN 103 (for VIDEO) for the VDSL port.



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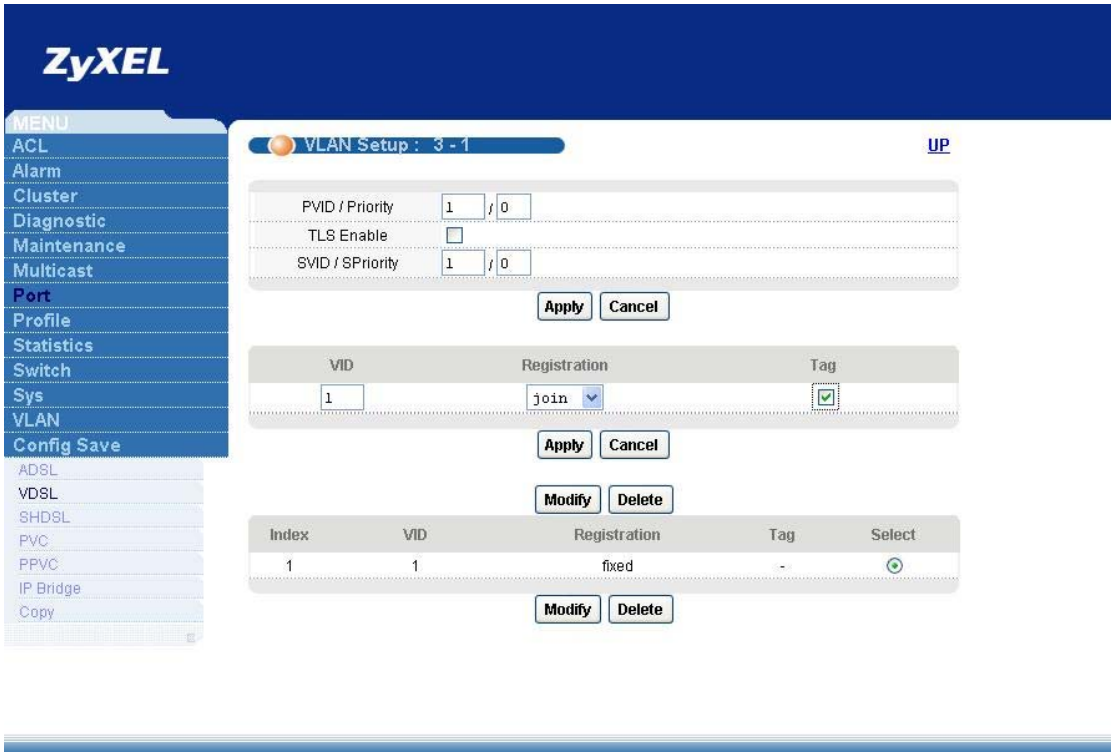
a. Create VLAN 1

VLAN 1 is created by default. Click **Modify** and check the **Tag** box. Click **Apply** to finish the VLAN 1 configuration.



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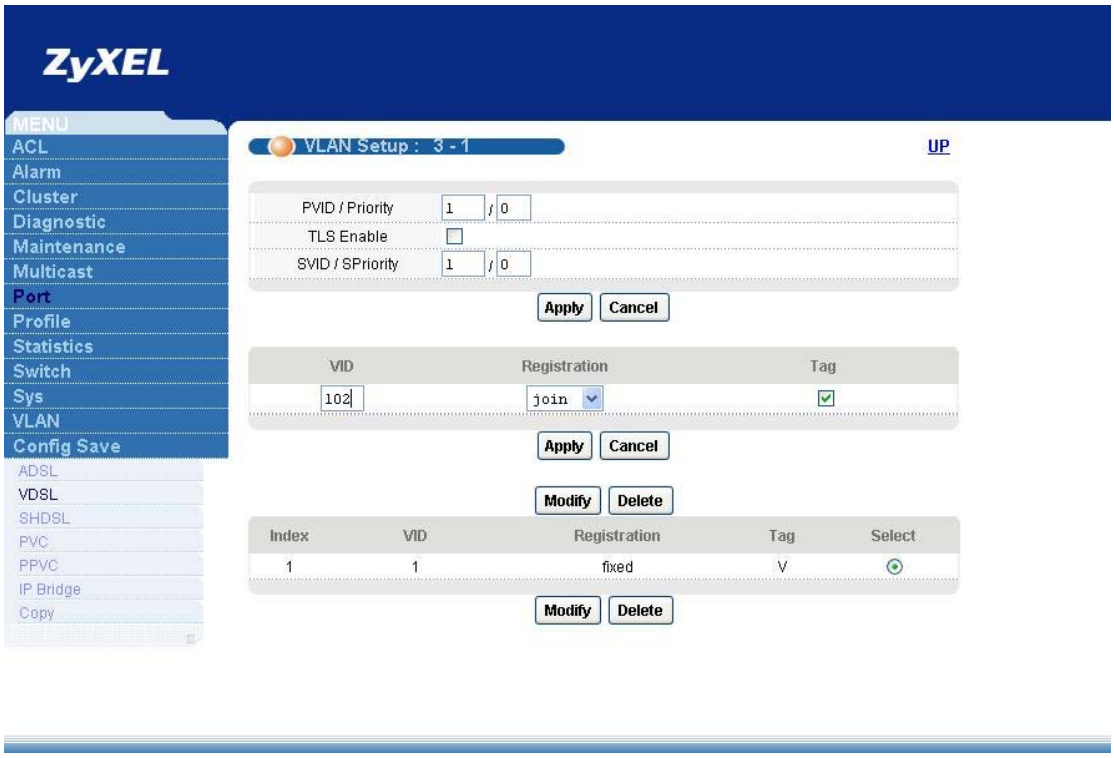
b. Create VLAN 102

Fill in **VID** with **'102'** and check the **Tag** box. Click **Apply** to finish the VLAN 102 configuration.



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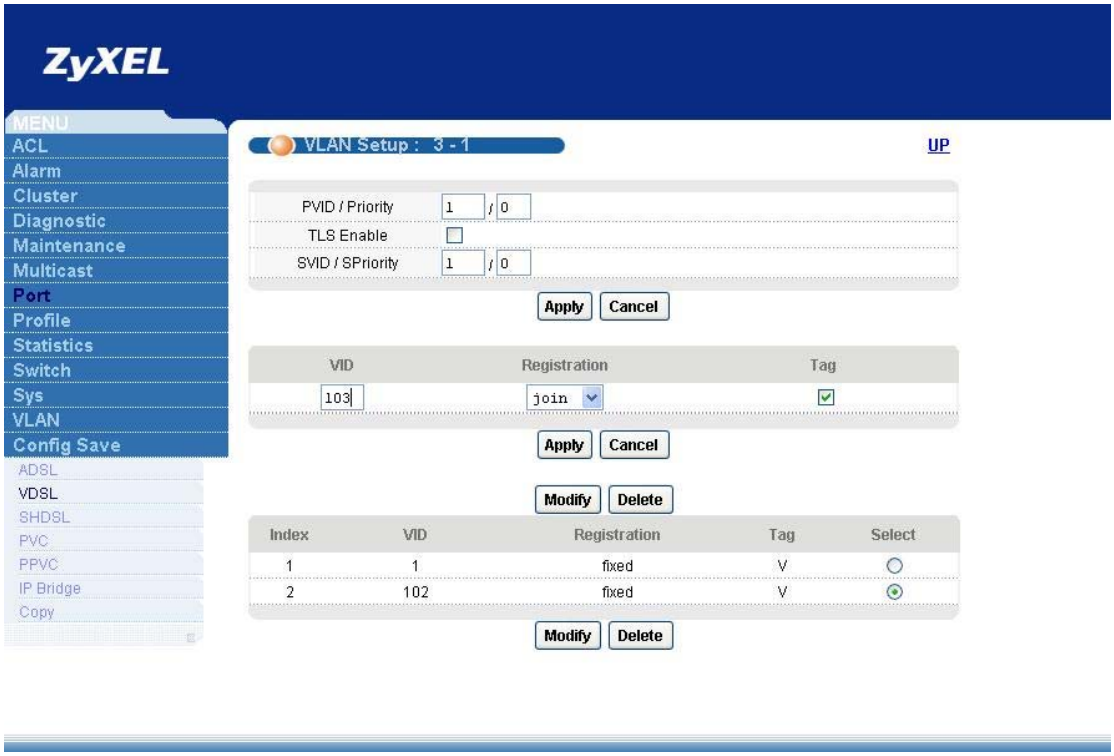
c. Create VLAN 103

Fill in **VID** with **'103'** and check the **Tag** box. Click **Apply** to finish the VLAN 103 configuration.



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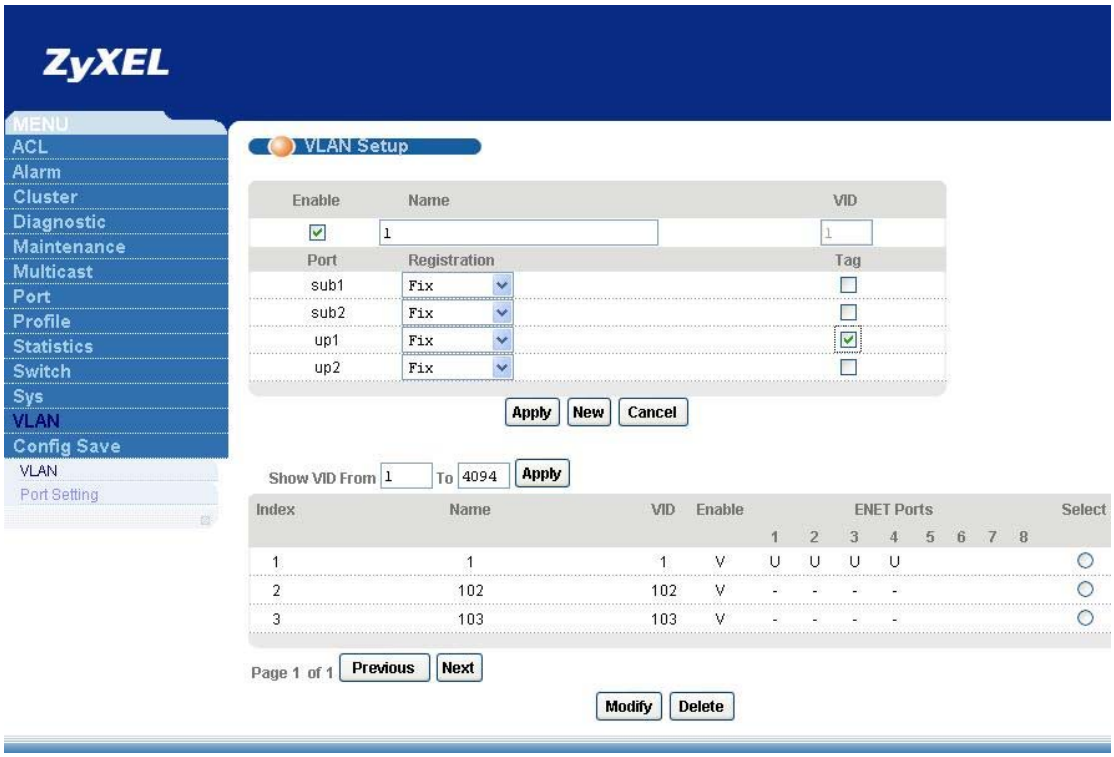
6. Configure VLANs on ENET Port 3 (up1)

a. Configure VLAN 1

Select **Index 1** and click **Modify**. Check the **Tag** box on **up1**. Click **Apply** to take effect.



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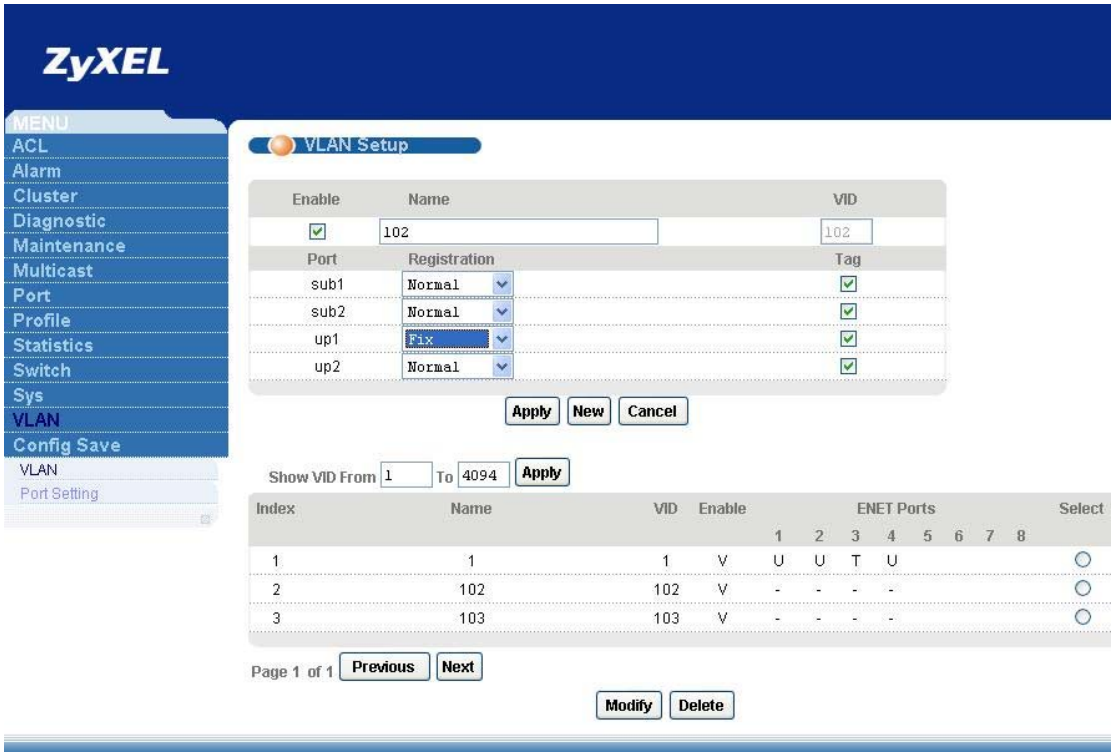
b. Configure VLAN 102

Select **Index 2** and click **Modify**. Choose the **Registration** as **'Fix'** and check the **Tag** box on **up1**. Click **Apply** to take effect.



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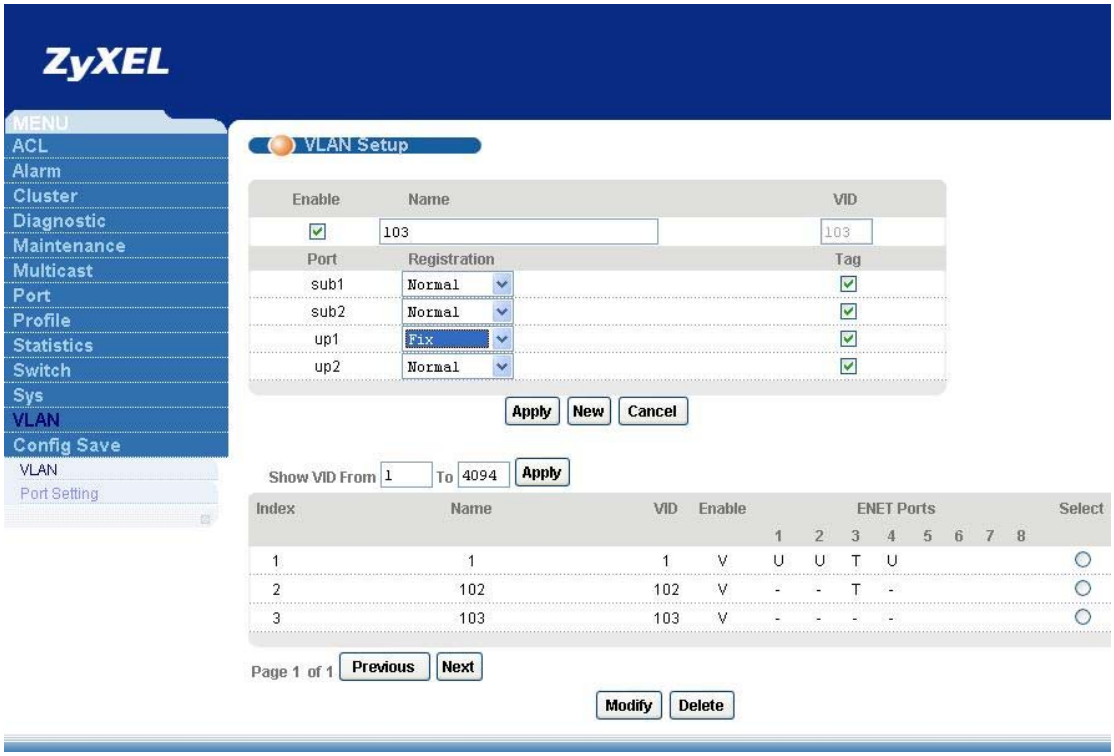
c. Configure VLAN 103

Select **Index 3** and click **Modify**. Choose the **Registration** as **'Fix'** and check the **Tag** box on **up1**. Click **Apply** to take effect.



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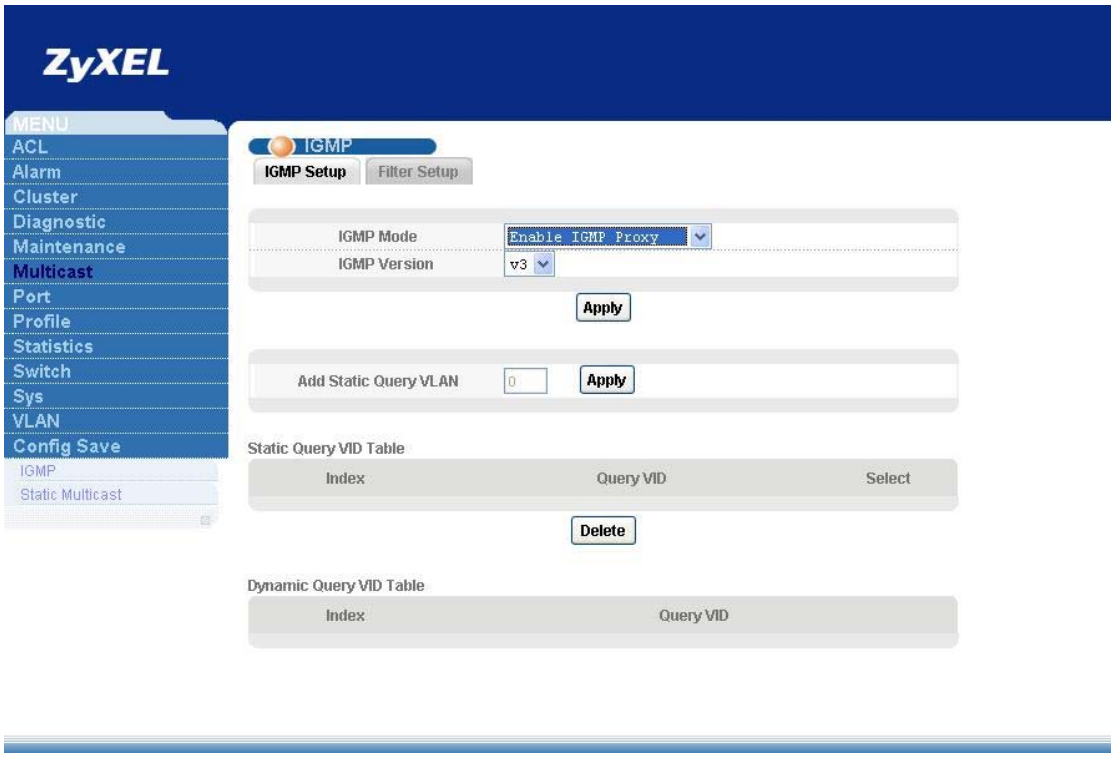
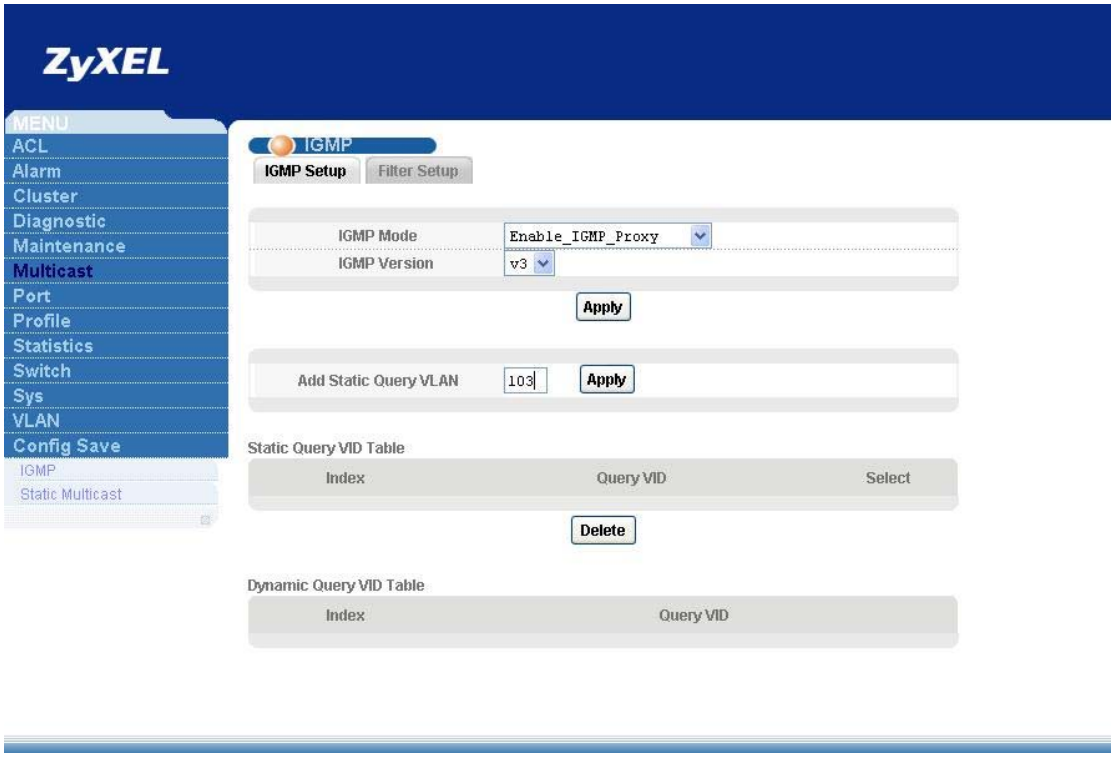
7. Enable **IGMP Proxy** on IES-5000

Click **Multicast > IGMP**. Choose the **IGMP Mode** as **Enable_IGMP_Proxy** and click **Apply** to finish the setup.



Fill in **Add Static Query VLAN** with '**103**' and then click **Apply** to take effect.



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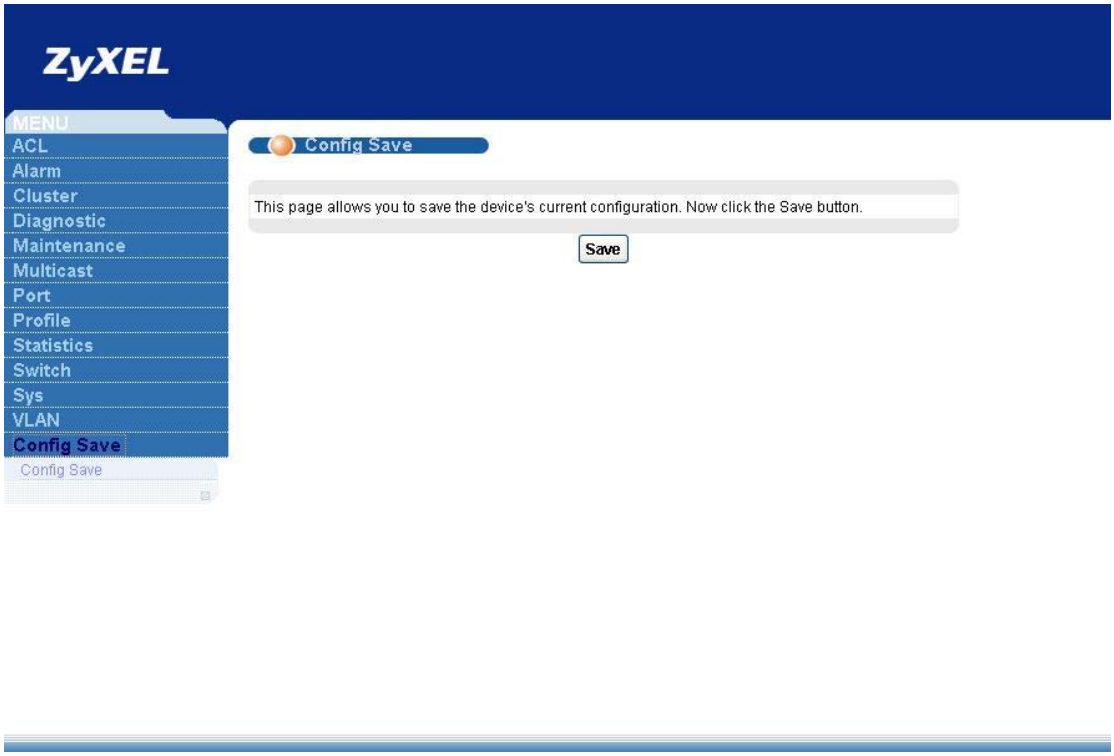
8. Save configurations

Click **Config Save > Config Save** and click the **Save** button to save your configurations.



P870MH-C1 Installation

1. Get into the device by Telent. Access the SMT menu 24.8 into CI command mode.

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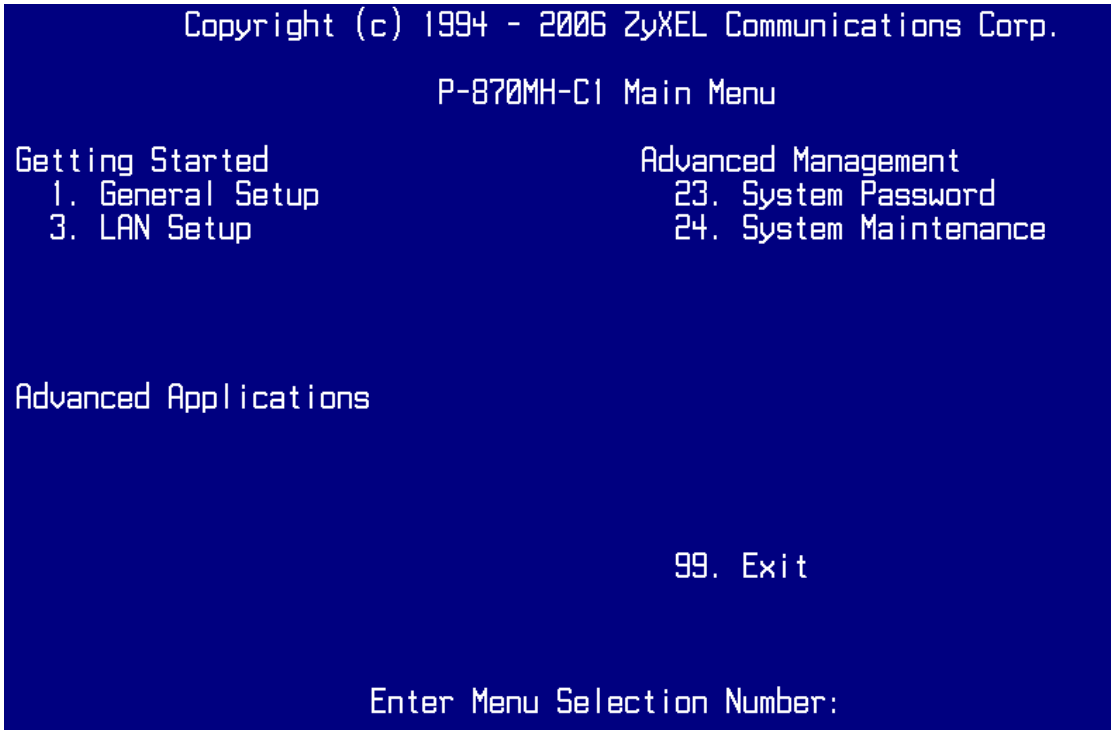
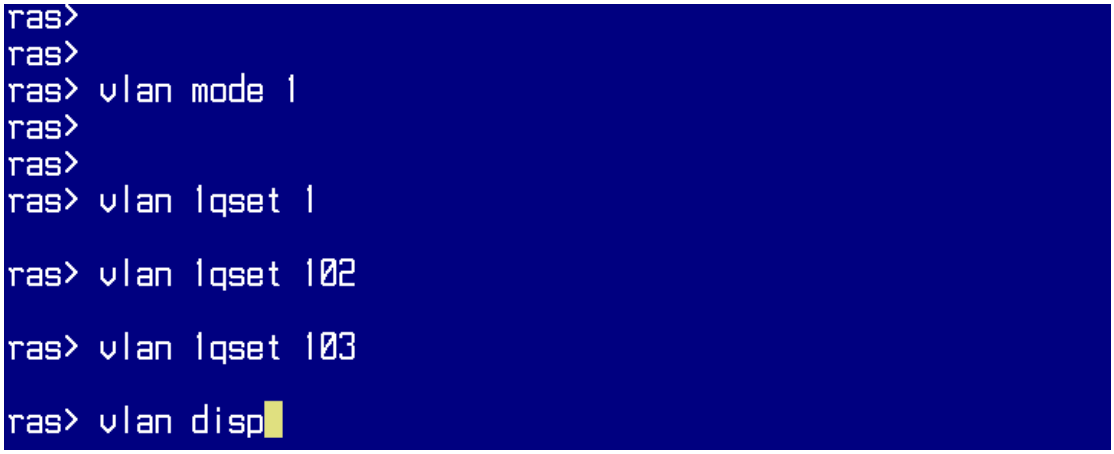


2. Change mode to 802.1q by ‘vlan mode 1’. Meanwhile create 3 VLANs on P870MH-C1, VLAN 1/102/103.

After you created 3 VLANS, check where the VLAN located by VLAN disp CI command.



3. Display the configured VLANs, check the relationship between "ITEM" vs. the VID whcich we just configured. Boundle VLAN1 on port 1, VLAN 102 on port 2, Vlan 103 on port 3 without transmission any Tagged frame. Also, add the VLAN tag(1, 102 & 103) onto outgoing VDSL port.

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```
ras>
ras> vlan lqconfig 1 U 1

ras> vlan lqconfig 1 T 5

ras> vlan lqconfig 6 U 2

ras> vlan lqconfig 6 T 5

ras> vlan lqconfig 7 U 3

ras> vlan lqconfig 7 T 5
```

4. Since Port 1(VLAN 1) is for Data access, Port 2(VLAN 102) is for VoIP and Port 3(VLAN 103) is for IPTV service. On Port 2 & Port 3, we can assign it for higher priority(qos=High) when there is traffic congestion occrued. For Port 1's traffic, we can assign the priority as 'Low' since the Internet access traffic is not time sensitive.

```
ras> vlan qos 1 0
ras> vlan qos 2 1
ras> vlan qos 3 1
ras>
ras> vlan save
ras>
```

5. Check whether all the settings are correct.

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```
======================   802.1Q Setting   ======================
(T):TAGGING; (F):FORBIDDEN; (U):UNTAGGED;

Port ID       :    0     1     2     3     4     5
Priority      :    L     L     H     H     L     L
                 WLAN  LAN1  LAN2  LAN3  LAN4  VDSL
ITEM  VID     :
 0      0
 1      1            U                       T
 2      0
 3      0
 4      0
 5      0
 6    102                  U                 T
 7    103                        U           T

================================================================

Broadcast Storm is DISABLE
Action for UnKnown Multicast frames is FLOODING
================================================================
ras>
```

ES2024A Settings

5. Connect to IES-1248 by Web GUI. The default IP address of ES-2024A is **192.168.1.1**. Enter the default password **‘1234’** to get into the device.

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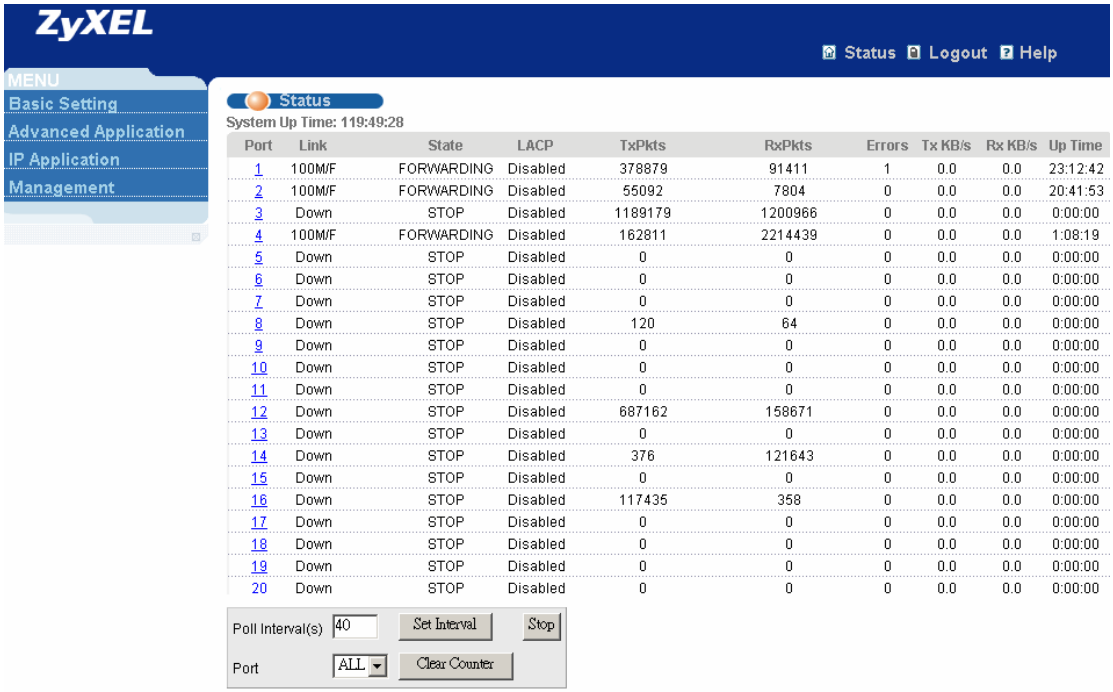
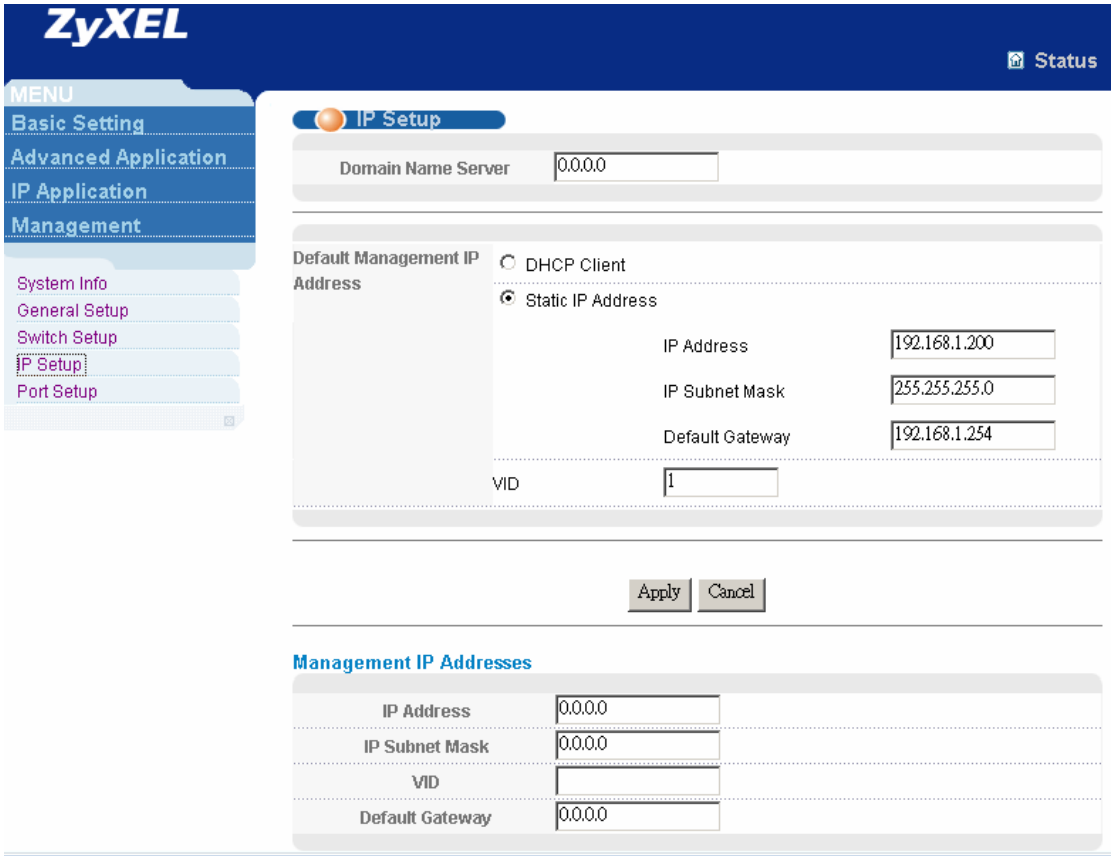

ZyXEL
Status Logout Help
MENU
Basic Setting
Advanced Application
IP Application
Management
Status
System Up Time: 119:49:28
Port Link State LACP TxPkts RxPkts Errors Tx KB/s Rx KB/s Up Time
1 100M/F FORWARDING Disabled 378879 91411 1 0.0 0.0 23:12:42
2 100M/F FORWARDING Disabled 55092 7804 0 0.0 0.0 20:41:53
3 Down STOP Disabled 1189179 1200966 0 0.0 0.0 0:00:00
4 100M/F FORWARDING Disabled 162811 2214439 0 0.0 0.0 1:08:19
5 Down STOP Disabled 0 0 0 0.0 0.0 0:00:00
6 Down STOP Disabled 0 0 0 0.0 0.0 0:00:00
7 Down STOP Disabled 0 0 0 0.0 0.0 0:00:00
8 Down STOP Disabled 120 64 0 0.0 0.0 0:00:00
9 Down STOP Disabled 0 0 0 0.0 0.0 0:00:00
10 Down STOP Disabled 0 0 0 0.0 0.0 0:00:00
11 Down STOP Disabled 0 0 0 0.0 0.0 0:00:00
12 Down STOP Disabled 687162 158671 0 0.0 0.0 0:00:00
13 Down STOP Disabled 0 0 0 0.0 0.0 0:00:00
14 Down STOP Disabled 376 121643 0 0.0 0.0 0:00:00
15 Down STOP Disabled 0 0 0 0.0 0.0 0:00:00
16 Down STOP Disabled 117435 358 0 0.0 0.0 0:00:00
17 Down STOP Disabled 0 0 0 0.0 0.0 0:00:00
18 Down STOP Disabled 0 0 0 0.0 0.0 0:00:00
19 Down STOP Disabled 0 0 0 0.0 0.0 0:00:00
20 Down STOP Disabled 0 0 0 0.0 0.0 0:00:00
Poll Interval(s) 40 Set Interval Stop
Port ALL Clear Counter

6. Set the IES-1248's IP address to '**192.168.1.200**'.

Open **Basic Setting> IP setup**. Type in the IP address **'192.168.1.100'** and its subnet mask **'255.255.255.0'.**



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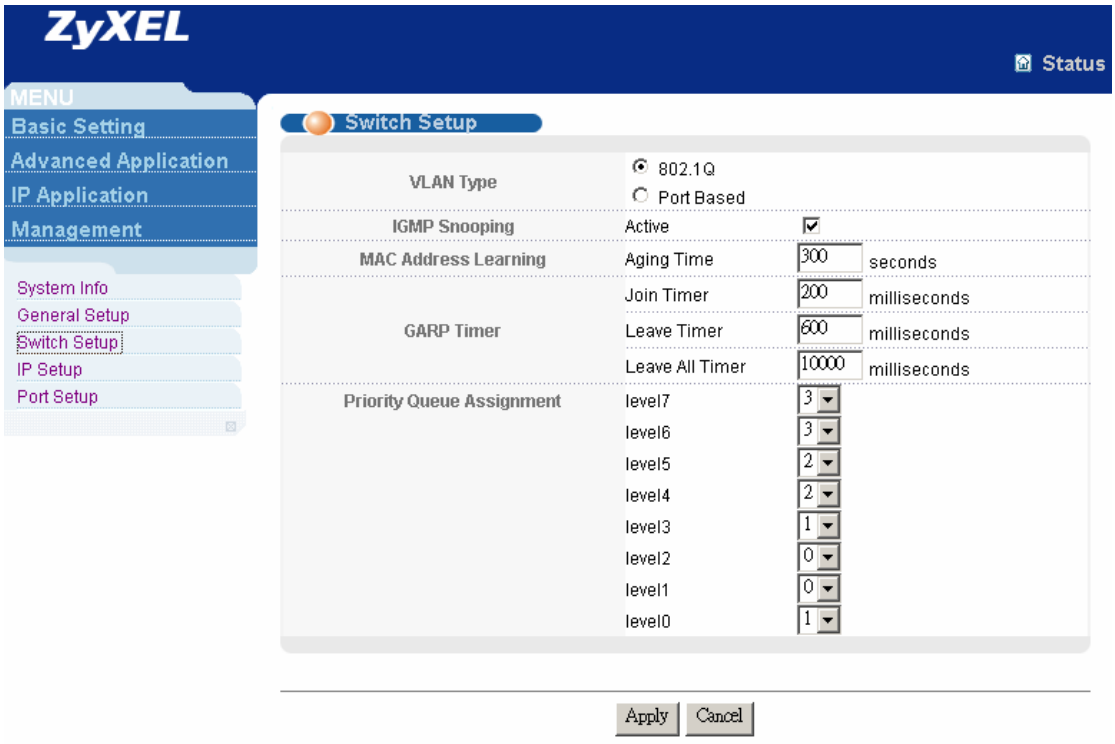
7. Enable the IGMP Snooping service in order to allow the Multicast traffic pass through the ES-2024A

Click Basic Setting> Switch Setup. Then click on the **Active checking Box** of **IGMP Snooping.**



8. Create 3 VLANs, VLAN 1 for Data access (FTP server) connected to Ethernet port 3, VLAN 102 for Voice (SIP server & ATA) connected to the Ethernet port 1 & 2 and finally VLAN 103 for Video server connected to the Ethernet Port 4. And the Uplink port is 24.

d. Create VLAN 1

Click **Advanced Application> VLAN> Static VLAN Setting** and then click on **VID 1**. Check the **Active Box** then **check** the Tx Tagging Box on **Port 24** (for the other ports have this option unchecked) and swith **Ports 1, 2 and 4** to status '**Forbidden'**. Click **Add** to finish the VLAN 1 configuration.

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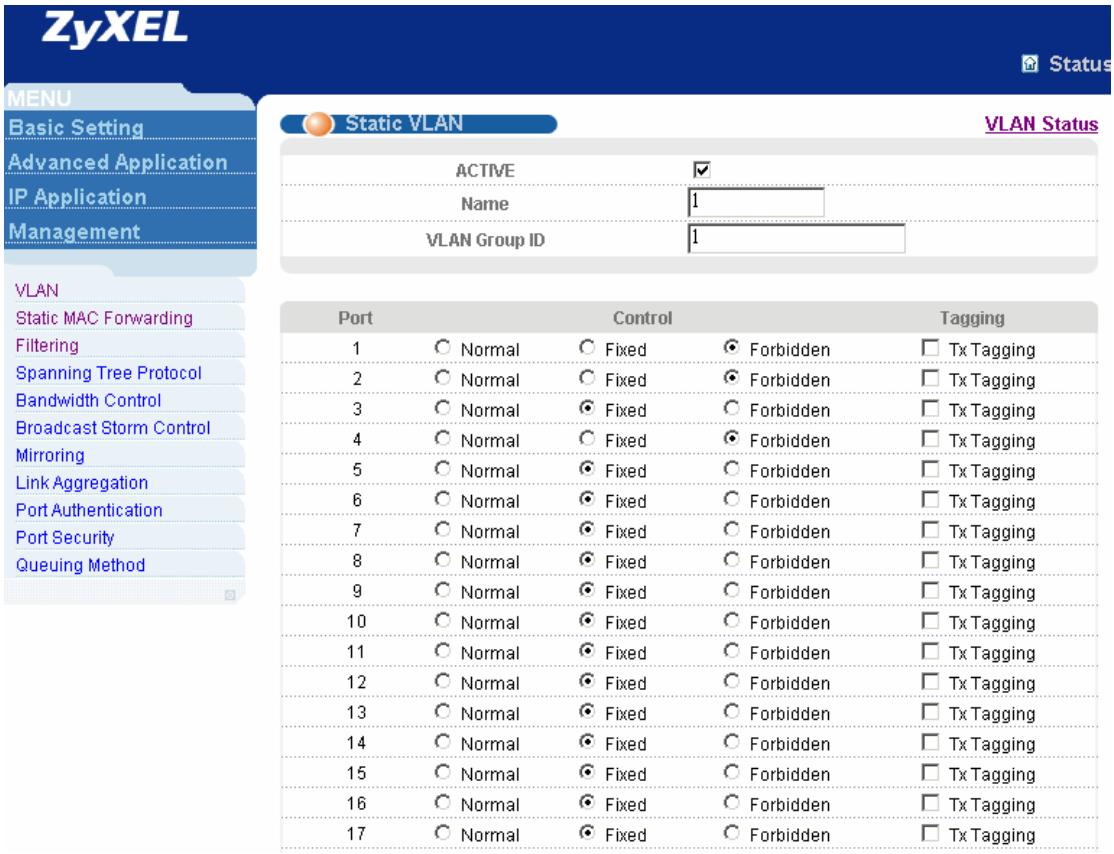

e. Create VLAN 102

Click **Advanced Application> VLAN> Static VLAN Setting** then check the **Active Box**, type in a name for VLAN as well as VLAN ID102. Then **check** the Tx Tagging Box on **Port 24 24** (for the other ports have this option unchecked) and switch **Ports 1, 2 and 24** to status '**Fixed'**. Click **Add** to finish the VLAN 102 configuration.

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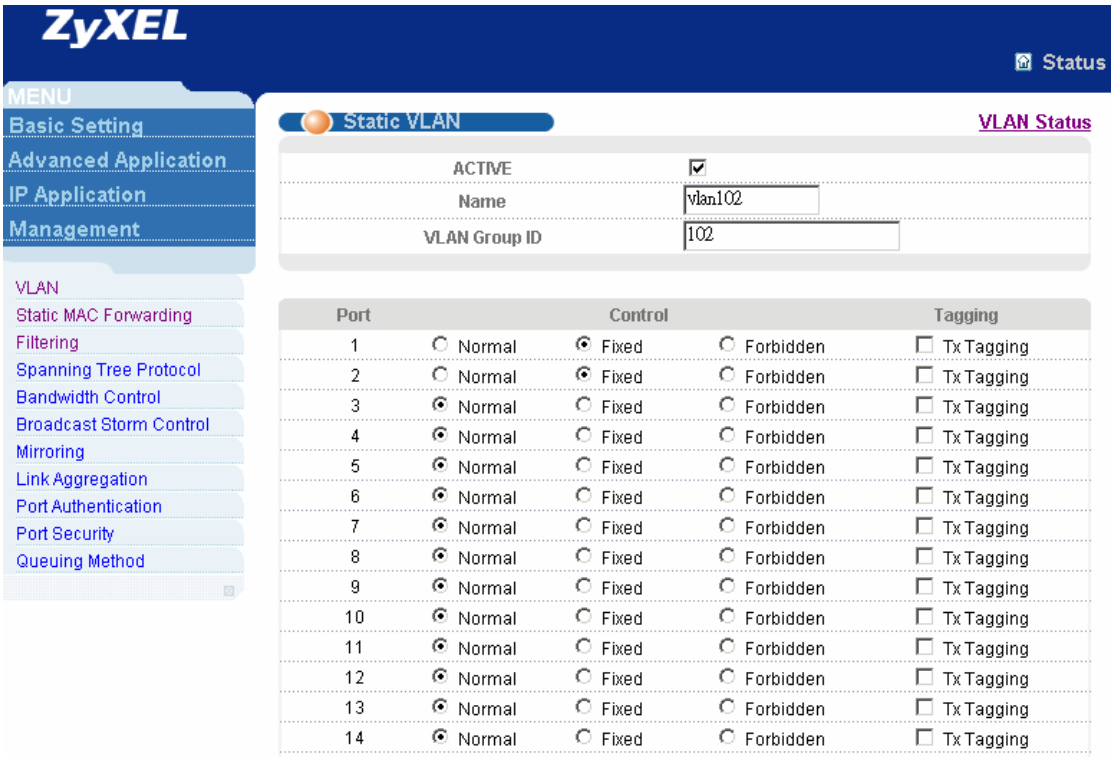

f. Create VLAN 103

Click **Advanced Application> VLAN> Static VLAN Setting** then check the **Active Box**, fill in a name for VLAN as well as VLAN ID 103. Then **check** the Tx Tagging Box on **Port 24 24** (for the other ports have this option unchecked) and switch **Ports 4 and 24** to status '**Fixed'**. Click **Add** to finish the VLAN 103 configuration.

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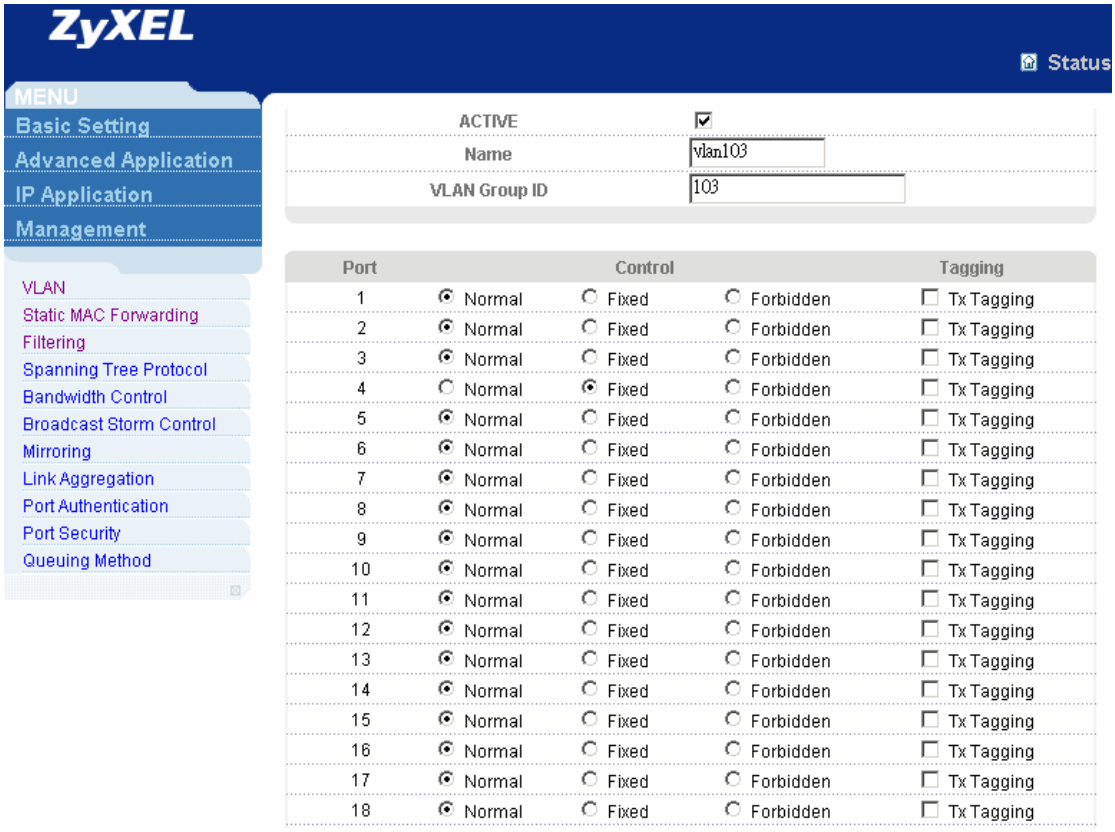
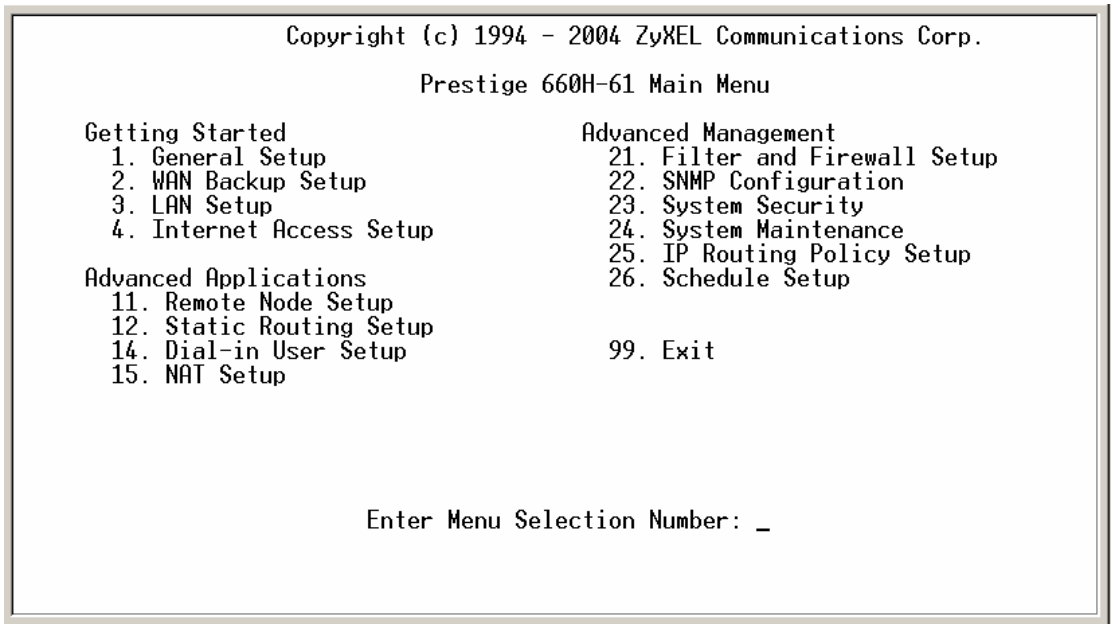


P660H settings

9. Connect to the P660HW-61 using Telnet. The default IP address of P660H-61 is 192.168.1.1. Enter the default password '1234' to access the device.



10. Disable the VC hunt mechanism and Reboot the device.

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Select SMT menu 24 and 8 for Command Interface Mode. Type **'wan atm vc active no'** and then **'wan atm vc save'** to save the settings. Reboot the device for the changes to take effect.

```
                        Menu 24 - System Maintenance

                      1.  System Status
                      2.  System Information and Console Port Speed
                      3.  Log and Trace
                      4.  Diagnostic
                      5.  Backup Configuration
                      6.  Restore Configuration
                      7.  Upload Firmware
                      8.  Command Interpreter Mode
                      9.  Call Control
                      10. Time and Date Setting
                      11. Remote Management



                        Enter Menu Selection Number: 8

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111> wan atm vc active no
111> wan atm vc save_
```

3. There will have three bridge PVCs on the P660H-61. Configure the system to support Bridge mode.

Access the SMT menu 1 and type in the System Name and e**nable** the **Bridge=Yes.**

```
                        Menu 1 - General Setup

                System Name= P660
                Location=
                Contact Person's Name=
                Domain Name=
                Edit Dynamic DNS= No

                Route IP= No
                Bridge= Yes




                Press ENTER to Confirm or ESC to Cancel:
```

4. Change the P660H-61's IP address to **192.168.1.10** and **disable** the DHCP server function in SMT menu 3.2.

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```
                Menu 3.2 - TCP/IP and DHCP Setup

DHCP Setup
  DHCP= None
  Client IP Pool Starting Address= N/A
  Size of Client IP Pool= N/A
  Primary DNS Server= N/A
  Secondary DNS Server= N/A
  Remote DHCP Server= N/A
TCP/IP Setup:
  IP Address= 192.168.1.10
  IP Subnet Mask= 255.255.255.0
  RIP Direction= None
    Version= N/A
  Multicast= None
  IP Policies=
  Edit IP Alias= No

Press ENTER to Confirm or ESC to Cancel:
```

5. Create 3 PVCs in the P660H for Triple-play application (Data, Voice and Video)

a. Create a PVC for the Data access(Internet access)

Get into SMT menu 11.1 and switch the **Rem Node Name=Data, Active=Yes, Encapsulation= RFC 1483, Multiplexing= LLC-based** and **Route=None Bridge=Yes.**

```
                    Menu 11.1 - Remote Node Profile

Rem Node Name= Data                 Route= None
Active= Yes                         Bridge= Yes

Encapsulation= RFC 1483             Edit IP/Bridge= No
Multiplexing= LLC-based             Edit ATM Options= No
Service Name= N/A                   Edit Advance Options= N/A
Incoming:                           Telco Option:
  Rem Login= N/A                      Allocated Budget(min)= N/A
  Rem Password= N/A                   Period(hr)= N/A
Outgoing:                             Schedule Sets= N/A
  My Login= N/A                       Nailed-Up Connection= N/A
  My Password= N/A                  Session Options:
  Authen= N/A                         Edit Filter Sets= No
                                      Idle Timeout(sec)= N/A

                Press ENTER to Confirm or ESC to Cancel:
```

Select the **ATM options=Yes**, **VPI/VCI=0/33** then press‘Enter’ to apply the changes.

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```
                Menu 11.6 - Remote Node ATM Layer Options
          VPI/VCI (LLC-Multiplexing or PPP-Encapsulation)

                VPI #= 0
                VCI #= 33
                ATM QoS Type= UBR
                Peak Cell Rate (PCR)= 0
                Sustain Cell Rate (SCR)= 0
                Maximum Burst Size (MBS)= 0




                    Enter here to CONFIRM or ESC to CANCEL:
```

b. Create a PVC for the Voice channel

Get into SMT menu 11.2, select the **Rem Node Name=Voice , Active=Yes, Encapsulation= RFC 1483, Multiplexing= LLC-based and Route=None Bridge=Yes.**

```
                        Menu 11.1 - Remote Node Profile

Rem Node Name= Voice                    Route= None
Active= Yes                             Bridge= Yes

Encapsulation= RFC 1483                 Edit IP/Bridge= No
Multiplexing= LLC-based                 Edit ATM Options= No
Service Name= N/A
Incoming:                               Telco Option:
  Rem Login= N/A                          Allocated Budget(min)= N/A
  Rem Password= N/A                       Period(hr)= N/A
Outgoing:                                 Schedule Sets= N/A
  My Login= N/A                           Nailed-Up Connection= N/A
  My Password= N/A                      Session Options:
  Authen= N/A                             Edit Filter Sets= No
                                          Idle Timeout(sec)= N/A


                    Press ENTER to Confirm or ESC to Cancel:
```

Select the **ATM options=Yes**, **VPI/VCI=0/34** then press ‘Enter’ to apply the changes.

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```
                Menu 11.6 - Remote Node ATM Layer Options
          VPI/VCI (LLC-Multiplexing or PPP-Encapsulation)

                VPI #= 0
                VCI #= 34
                ATM QoS Type= UBR
                Peak Cell Rate (PCR)= 0
                Sustain Cell Rate (SCR)= 0
                Maximum Burst Size (MBS)= 0




                Enter here to CONFIRM or ESC to CANCEL: _
```

c. Create a PVC for the Video channel

Access the SMT menu 11.3 and select the **Rem Node Name=Video, Active=Yes, Encapsulation= RFC 1483, Multiplexing= LLC-based and Route=None Bridge=Yes.**

```
                        Menu 11.1 - Remote Node Profile

Rem Node Name= Vedio                    Route= None
Active= Yes                             Bridge= Yes

Encapsulation= RFC 1483                 Edit IP/Bridge= No
Multiplexing= LLC-based                 Edit ATM Options= No
Service Name= N/A
Incoming:                               Telco Option:
  Rem Login= N/A                          Allocated Budget(min)= N/A
  Rem Password= N/A                       Period(hr)= N/A
Outgoing:                                 Schedule Sets= N/A
  My Login= N/A                           Nailed-Up Connection= N/A
  My Password= N/A                      Session Options:
  Authen= N/A                             Edit Filter Sets= No
                                          Idle Timeout(sec)= N/A


                    Press ENTER to Confirm or ESC to Cancel:
```

Select the **ATM options=Yes**, **VPI/VCI=0/35** then press ‘Enter’ to apply the changes.

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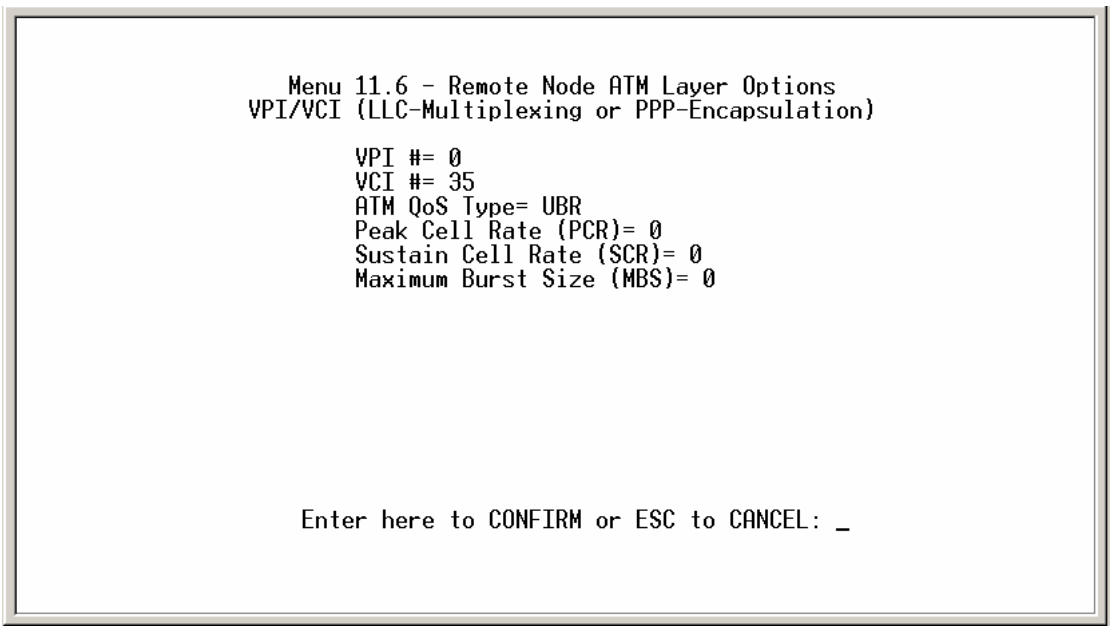
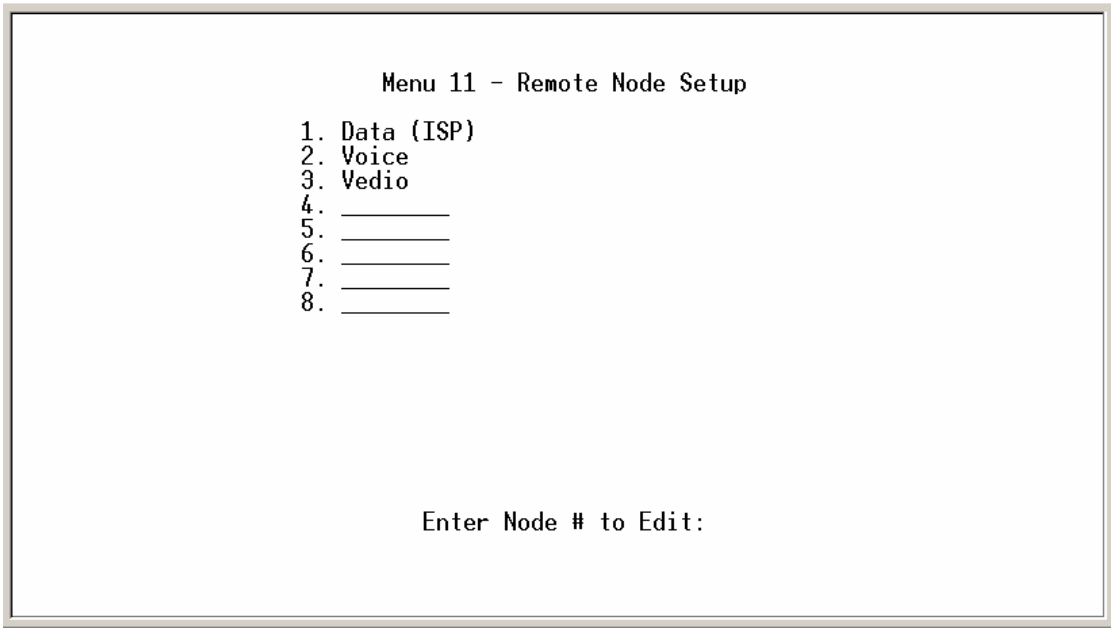

Menu 11.6 - Remote Node ATM Layer Options
VPI/VCI (LLC-Multiplexing or PPP-Encapsulation)
VPI #= 0
VCI #= 35
ATM QoS Type= UBR
Peak Cell Rate (PCR)= 0
Sustain Cell Rate (SCR)= 0
Maximum Burst Size (MBS)= 0
Enter here to CONFIRM or ESC to CANCEL: _

3 PVCs will be created as on the following figure:



6. Map 3 PVC to specific Ethernet port of the P660H-61.

Access SMT menu 24.8

Type ‘sys triple port set 1 1’ to map the Ehternet port 1 to PVC 1(Data)

Type ‘sys triple port set 2 2’ to map the Ehternet port 2 to PVC 2(Voice)

Type ‘sys triple port set 3 3’ to map the Ehternet port 3 to PVC 3(Video)

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```
                        Enter Menu Selection Number: 8


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P660>
P660>
P660> sys triple port set 1 1
Port Base Policy Configuration have been configured as follow. If you need
save and apply, Please execute CI cmds: sys tripleplay portbase save
EPort  --  PVC
  1    --   1
  2    --   2
  3    --   3
  4    --   disable
P660> sys triple port set 2 2
Port Base Policy Configuration have been configured as follow. If you need
save and apply, Please execute CI cmds: sys tripleplay portbase save
EPort  --  PVC
  1    --   1
  2    --   2
  3    --   3
  4    --   disable
P660> sys triple port set 3 3_
```

7. Check whether the ADSL physical layer is UP in the SMT menu 24.1. if the PVC counter is running.

```
                    Menu 24.1 - System Maintenance - Status          19:34:09
                                                              Sat. Jan. 01, 2000

Node-Lnk Status      TxPkts      RxPkts      Errors  Tx B/s  Rx B/s     Up Time
 1-1483  Up          376905      737167           0       0       0    17:51:41
 2-1483  Up            1846        2512           0       0       0    17:51:41
 3-1483  Up            3865      559943           0       0       0    17:51:41
 4       N/A              0           0           0       0       0     0:00:00
 5       N/A              0           0           0       0       0     0:00:00
 6       N/A              0           0           0       0       0     0:00:00
 7       N/A              0           0           0       0       0     0:00:00
 8       N/A              0           0           0       0       0     0:00:00

My WAN IP (from ISP): 192.168.1.10

    Ethernet:                                WAN:
      Status:                Tx Pkts: 1301745    Line Status: Up
      Collisions: 0          Rx Pkts: 386079     Upstream Speed:   511 kbps
    CPU Load =    2.82%                          Downstream Speed:  6141 kbps
                                  Press Command:
                     COMMANDS: 1-Reset Counters  ESC-Exit
```


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